MUNICIPAL AND INDUSTRIAL
WATER SUPPLY AND USES
IN THE
CEDAR/BEAVER BASIN

(Data Collected for Calendar Year 2002)

Prepared by

Utah Department of Natural Resources
Division of Water Resources

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ACKNOWLEDGMENTS

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Dennis Strong, Director

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EXECUTIVE SUMMARY

This document describes the municipal and industrial (M&I) water supplies and uses for the Cedar/Beaver Basin. Data is compiled by meeting with each public community and non-community system in the basin. The total M&I water supply and use for the basin are then tabulated by county. Portions of four counties comprise the Cedar/Beaver Basin: Beaver, Iron, Millard and Washington. The results reported herein represent totals for the 2002 calendar year.

The annual maximum potable water supplies for the public community water systems in the basin is 27,793 acre-feet. Of this total, springs account for approximately 23 percent and wells for 77 percent. Table I presents this data.

Table I
CEDAR/BEAVER BASIN
Maximum Potable Water Supplies for Public Community Systems
(Acre-Feet/Year)

County	Springs	Wells	Surface	Total
Beaver	1,369.2	4,846.0	0.0	6,215.2
Iron	4,739.7	15,853.3	0.0	20,593.0
Millard	0.0	0.0	0.0	0.0
Washington	277.4	707.7	0.0	985.1
TOTALS	**6,386.3**	**21,407.0**	**0.0**	**27,793.2**

Note: All values represent maximum system source capacities limited by water rights, hydrologic constraints, and/or system constraints.

The basin's annual reliable potable water supply under present conditions for the public community systems is 17,739 acre-feet. The breakdown of this supply is presented in Table II.

Table II
CEDAR/BEAVER BASIN
Reliable Potable Water Supplies for Public Community Systems
(Acre-Feet/Year)

County	SPRINGS	WELLS	SURFACE	TOTAL
Beaver	1,369.2	2,423.0	0.0	3,792.2
Iron	4,739.7	8,575.2	0.0	13,314.9
Millard	0.0	0.0	0.0	0.0
Washington	277.4	354.1	0.0	631.5
TOTALS	**6,386.3**	**11,352.3**	**0.0**	**17,738.6**

Total M&I water use can be divided into two categories: potable (culinary) and non-potable (secondary). Potable water is delivered by, and used within, public community, public non-community, self-supplied industrial, and private domestic systems. Both separate irrigation companies and the municipalities deliver non-potable (secondary) water for residential, institutional, commercial and industrial uses. Some self-supplied industries utilize both potable and non-potable water from their own sources.

Table III, on the following page, shows water use data for the potable and non-potable categories of water delivered by the public community systems within the basin. Categorically, the total water uses were 22% - residential indoor, 45% - residential outdoor, 13% - commercial, 16% - institutional, and 4% - light industrial/stockwatering.

TABLE III
CEDAR/BEAVER BASIN
Water Use for Public Community Systems
(Acre-Feet/Year)

	Beaver County	Iron County	Millard County	Washington County	Total
Potable Use					
Residential Indoor	420.0	2,742.5	0.0	110.8	3,273.3
Residential Outdoor	312.5	3,736.0	0.0	340.2	4,388.7
Commercial	245.2	1,622.4	0.0	14.1	1,881.7
Institutional	146.3	886.3	0.0	164.8	1,197.4
Industrial/Stockwater	135.2	397.9	0.0	1.6	534.7
Total Potable Use	1,259.2	9,385.1	0.0	631.5	11,275.8
Secondary Use					
Residential	832.1	1,313.8	0.0	0.0	2,145.9
Commercial	0.0	0.0	0.0	0.0	0.0
Institutional	593.9	593.6	0.0	0.0	1,187.5
Industrial/Stockwater	0.0	0.0	0.0	0.0	0.0
Total Secondary Use	1,426.0	1,907.4	0.0	0.0	3,333.4
TOTALS	**2,685.2**	**11,292.5**	**0.0**	**631.5**	**14,609.2**

Out of a total basin population of 43,440 in 2002, 39,350 people were served by the public community systems. For these systems, residential potable per capita water use calculates to 175 gallons per capita per day (gpcd). Similarly, non-potable residential water use calculated to 49 gpcd. The resultant total per capita water use is 224 gpcd for residential purposes within the public community systems of the basin. With the addition of commercial, institutional and industrial uses, the per capita water use for public community systems was 257 gpcd for potable uses and 76 gpcd for non-potable uses for a total use of approximately 333 gpcd. In 2003, the statewide average was 267 gpcd. The dry summer months and the long growing season in this basin greatly increase outside watering requirements. Additionally, secondary (non-potable) water comprises a high percentage of the residential and institutional outdoor use. Secondary water is rarely metered; therefore, it tends to be overused for outdoor watering needs. Both of these factors contribute to a great extent to the above average per capita use. These values are shown in Table IV, on the following page.

TABLE IV
CEDAR/BEAVER BASIN
Average Per Capita Use
(Supplied by Public Community Systems)

CATEGORY	Average Per Capita Use (Ac-Ft/Yr)	Average Per Capita Use (GPCD)
Residential Potable Use	0.196	175
Residential Potable Plus Secondary Use	0.251	224
Total Potable Use	0.288	257
Total Potable Plus Secondary Use	0.373	333

Note: Total potable categories include residential, commercial, institiutional and industrial uses.

Table V, on the following page, indicates the total potable and non-potable M&I water use for all system types in the Cedar/Beaver Basin for the year 2002. Public community systems deliver the majority of the potable water within the basin. The table indicates that the total potable M&I water use in 2002 was 14,893 acre-feet. Total non-potable M&I water use in 2002 for the basin was 8,763 acre-feet. Therefore, total M&I water use in 2002, for the Cedar/Beaver basin, was 23,656 acre-feet.

TABLE V
CEDAR/BEAVER BASIN
Total M&I Water Use for all Categories
(Acre-Feet/Year)

	Beaver County	Iron County	Millard County	Washington County	Total
Potable Use					
Public Community Systems	1,259.2	9,385.1	0.0	631.5	11,275.8
Public Non-Community Systems	40.4	78.4	53.2	0.1	172.1
Self-Supplied Industries	2,060.7	596.0	0.0	0.0	2,656.7
Private Domestic	163.9	619.1	2.0	3.3	788.2
Total Potable	3,524.2	10,678.6	55.2	634.9	14,892.8
Secondary Use					
Secondary Irrigation Companies	1,426.0	1,907.4	0.0	0.0	3,333.4
Public Non-Community Systems	0.0	0.0	6.4	0.0	6.4
Self-Supplied Industries	3,629.0	1,794.0	0.0	0.0	5,423.0
Total Secondary	5,055.0	3,701.4	6.4	0.0	8,762.8
TOTALS	**8,579.2**	**14,380.0**	**61.6**	**634.9**	**23,655.6**

Table VI includes the "water budget" for Public Community Systems and all M&I uses for the basin. A water budget indicates the amount of water diverted for use within the system and the amount of water depleted from the system due to the use. Appendix E contains a table that indicates more specific details about the diversions and depletions from each individual community system within the basin.

TABLE VI
CEDAR/BEAVER BASIN
M&I Water Budget
(Acre-Feet/Year)

	Beaver County		Iron County		Millard County		Washington County		Totals	
	Diversions	Depletions	Diversions	Depletions	Diversions	Depletions	Diversions	Depletions	Diversions	Depletions
Public Community Systems	2,685.2	1,586.2	11,292.5	5,065.2	0.0	0.0	631.5	362.9	14,609.2	7,014.3
Municipal & Industrial (M&I)										
Indoor Use	6,550.6	6,011.7	7,230.3	3,019.4	17.1	1.2	157.8	46.4	13,955.8	9,078.7
Outdoor Use	2,028.6	1,352.4	7,149.7	4,766.5	44.5	29.6	477.1	318.1	9,699.9	6,466.6
Total M&I	**8,579.2**	**7,364.1**	**14,380.0**	**7,785.9**	**61.6**	**30.8**	**634.9**	**364.5**	**23,655.7**	**15,545.3**

* Totals may differ slightly due to rounding

INTRODUCTION

Authority

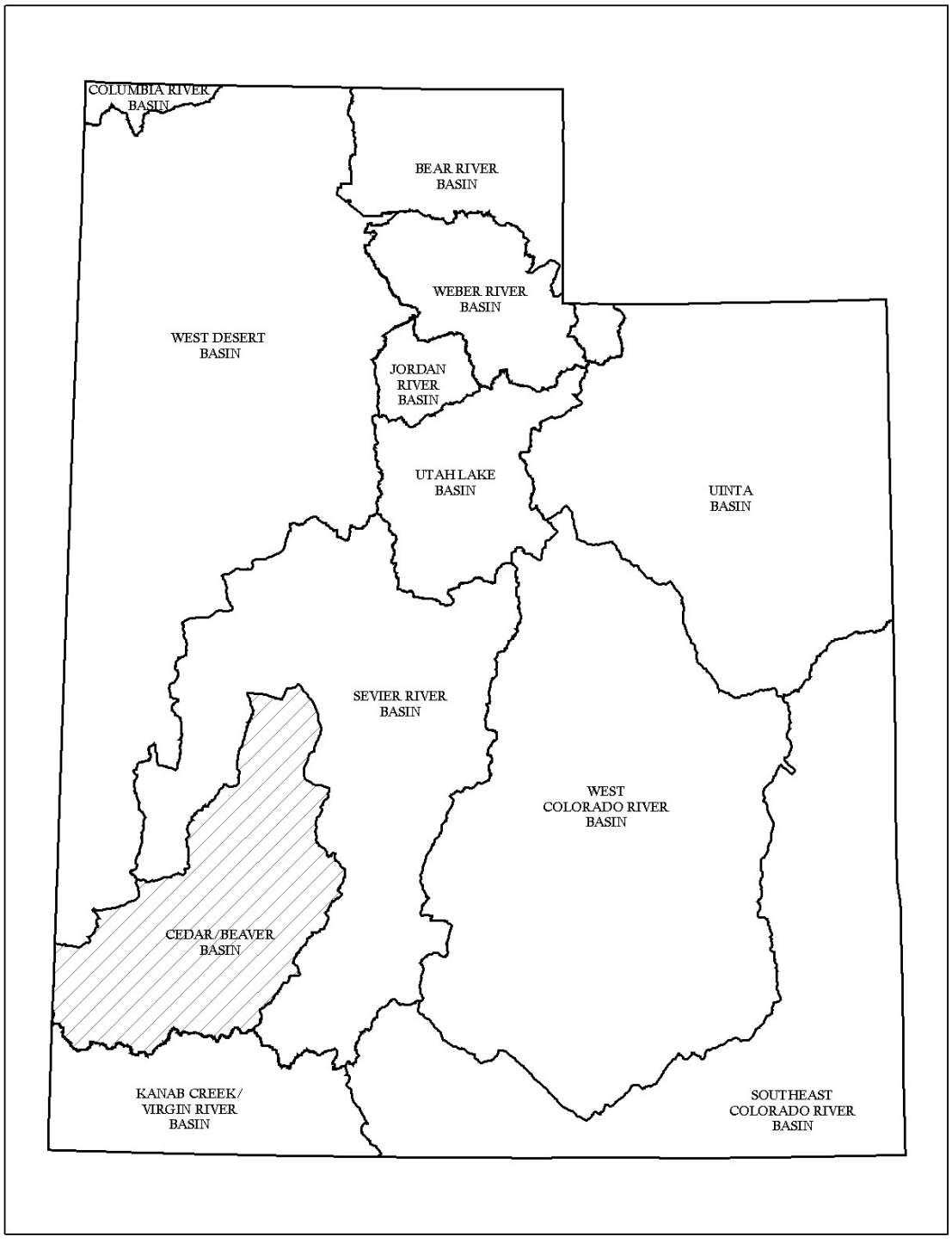
The Utah Division of Water Resources (DWRe) has the overall responsibility for completing studies, investigations, and plans to assist the responsible development and utilization of the water resources of the state of Utah. The State Water Plan, prepared and distributed in early 1990 by the DWRe, provided the foundation and overall direction to establish and implement the state policy framework of water management. As part of the state water planning process, the DWRe prepares detailed plans for each of the 11 hydrologic basins in the state. The Cedar/Beaver Basin is one of these 11 basins. A location map of the Cedar/Beaver Basin is shown in Figure 1 on the next page.

Each basin water plan identifies potential conservation and development projects and describes alternatives to efficiently satisfy the water needs of that basin. As part of this effort, background data reports are completed for each river basin. These include a Water-Related Land Use Report and a Municipal & Industrial Water Supply & Use Report.

Scope

As stated earlier, the subject of this M&I report is a determination of present M&I water supplies and uses within this basin. The data presented in this report may be used in the State Water Plan for the Cedar/Beaver Basin as well as other DWRe reports and studies. Information considered for this report also includes related investigations recently completed by the DWRe and the Utah Division of Water Rights (DWRi).

Figure 1. Location of Cedar/Beaver Basin



Data Collection

This study was initiated in March 2004. The 2002 *Municipal and Industrial Water Use Forms,* distributed by the DWRe, in cooperation with the DWRi and the Utah Division of Drinking Water (DDW), were used as the basis for the study. In all counties, the data collection process is as described in the following section, *Water Supply and Use Methodology*. Water rights discussions presented herein were prepared based on information obtained from the DWRi.

General Description of the Basin

The Cedar/Beaver Basin includes approximately 5,650 square miles of land in the southwest area of the state. Utah's portion of the basin extends from the Utah/Nevada state line on the southwestern tip and by the Needle Range and the Cricket Mountains along the southwest to northeast line. The northern tip opens up into the Sevier Desert. On the east, the Mineral Mountains, the Tushar Mountains, and the Hurricane Cliffs bound the basin. The basin spans most of Iron County as well as part of Beaver and Millard counties. The basin consists of four valleys (Beaver, Cedar City, Escalante, and Parowan) that are bounded by mountains and form closed basins.

Elevations within the basin vary from high points of 12,170 feet in the Tushar Mountains to a low of 4,560 feet where the Beaver River leaves the Escalante Valley drainage. Notable features of the basin include Historic Old Cove Fort, Cedar Breaks National Monument, and Iron Mission and Minersville State Parks. Figure 2, on page 5, is a detailed map of the basin.

The basin has 29 public community water systems. These systems serve 39,350 people (almost all of the 43,440 total basin population). In addition, the basin has 24 public non-community systems. Figure 3, on page 6, shows the location of these systems. These systems serve National Monuments, State Parks, summer home communities, campgrounds, isolated commercial establishments, and roadside rest stops and parks. The basin also has eight self-supplied industries.

M&I water use is steadily increasing within the basin as the entire basin is currently experiencing accelerated growth. Tourism, industry and climate drive most of this growth, which is likely to continue well into the future.

Figure 2. Cedar/Beaver Basin Drainage Map

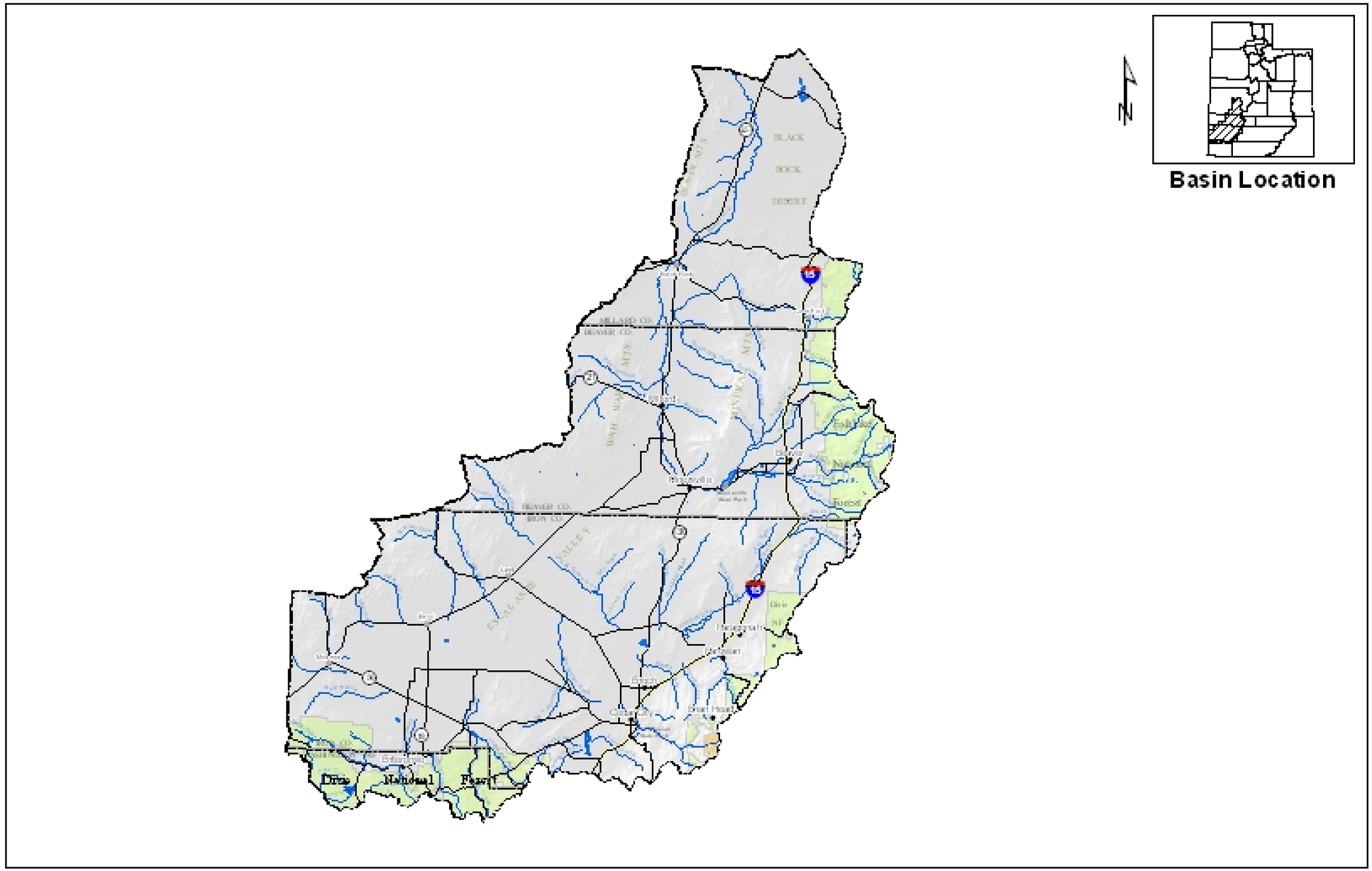
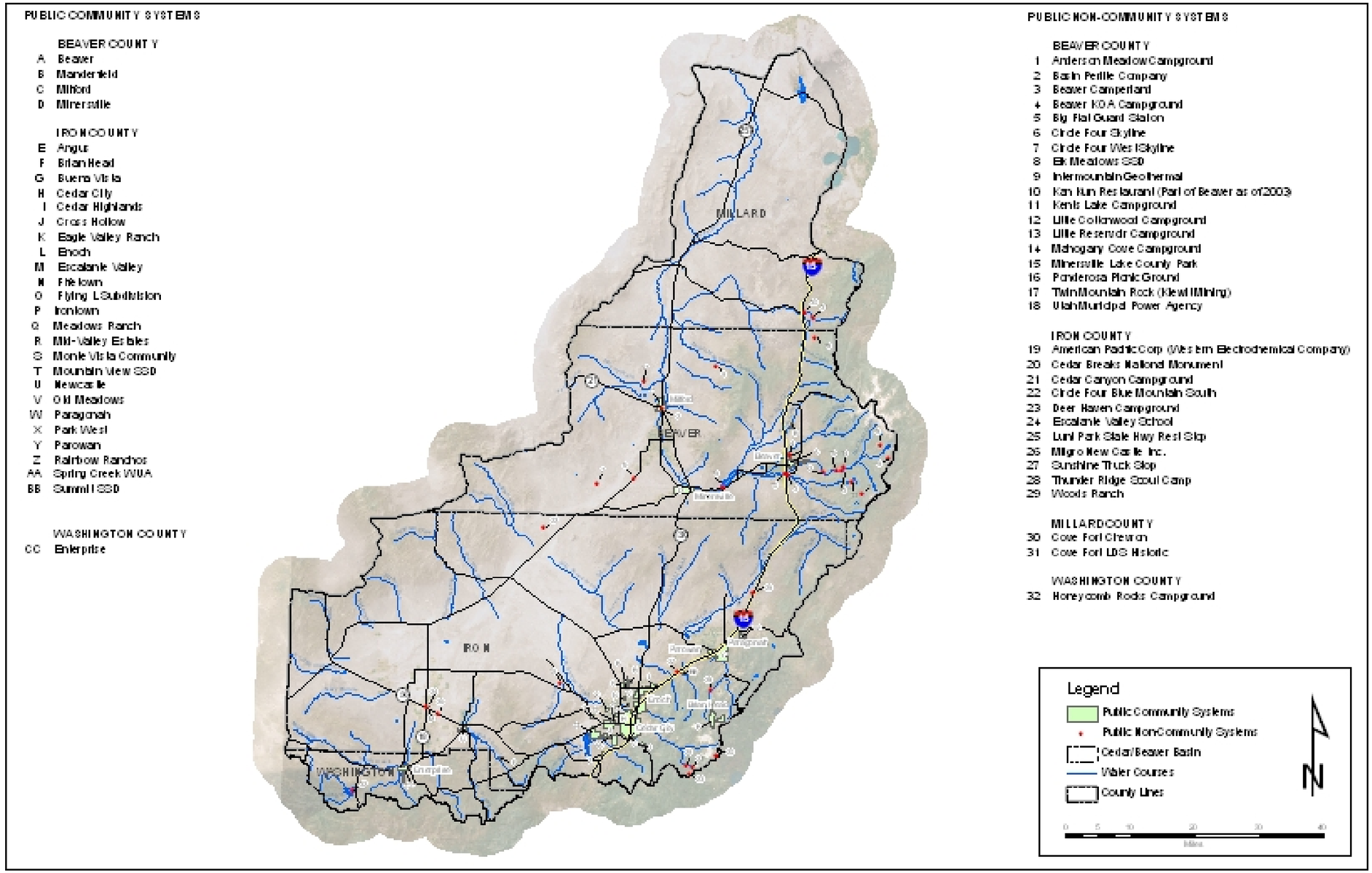


Figure 3. Locations of Public Community and Non-Community Systems



WATER SUPPLY AND USE METHODOLOGY

Background

Over the past 45 years, the DWRe has employed various procedures to obtain municipal and industrial water use (M&I) data. In recent years, these procedures have become more comprehensive. When the DWRe began water planning in the 1960's, available data consisted mainly of supplies and uses for the state as a whole. At that time, Utah's agricultural water uses far exceeded M&I uses. M&I water use was calculated simply by multiplying estimated per capita water use rates by census population data.

By the early 1980's, M&I diversions made up a larger percent of all statewide water uses and the entire water community increased their focus on M&I water supplies and uses. The DWRi launched a program to collect yearly, statewide M&I data from each public community water system. The procedure involved mailing a survey designed to query major public water suppliers about their sources of water supply. Additionally, the United States Geological Survey (USGS) began M&I water use studies. The DWRe relied on both data sources in its planning efforts by the late 1980's.

With the preparation of the State Water Plan Basin reports, and the increasing focus on water conservation, the DWRe saw the need to verify and improve the quality and quantity of the available data. The first method used included assisting the DWRi in the improvement of their M&I data collection program. Secondly, the DWRe began verifying the accuracy of the data through yearly field surveys described in the following four sections.

Present Methodology for Community Water Systems

Each year, the DWRe targets several hydrologic basins for M&I water supply and use analysis. The most recent water use information supplied by the DWRi is the basis used to begin the study. Prior to 2003, this information was submitted using a standard form by each water supplier. An example of the water use data form for Enoch is found in Appendix D. Since 2003, the program has been updated, allowing for the water suppliers to electronically submit their data.

The DWRe staff contact the manager or operator of each community water system (as defined by the DDW) to schedule a data collection and analysis meeting. These meetings are necessary because data often is not reported (either on the water use forms or electronically) in the detail required for a complete M&I water use study. During these meetings, staff clarifies and collects additional data as needed. Total water supply and usage of the water systems are calculated based on information gathered during these meetings. When data is not available, it is necessary to estimate a part or all of the system use.

A secondary objective of these meetings is to instruct the operator or manager on how to most accurately and effectively complete the water use data form and/or submit their information electronically. This methodology has been used since 1992.

Water Supply

Two factors define the potable water supply: maximum water supply available under present conditions and reliable water supply. The maximum water supply available under present conditions is defined as the water resource that is presently developed. It is limited by a mechanical constraint (such as pump capacity or pipe size), a hydrologic constraint (such as reliable stream flow or groundwater safe yield) or a legal constraint (such as a water right or contract). **The lesser amount of water supply, due to these three constraints, is considered to be the maximum water supply available under present conditions used in this analysis.** The

determination of well pump capacities, average annual spring flow estimates, treatment plant capacities, and water right information aid in the calculation of this value. It should be noted that, due to the complexity of water rights, contracts, exchanges, etc., a detailed search of water right limitations associated with each entity is not within the scope of this study.

The reliable potable water supply is defined as the capacity to meet peak day demands, expressed as an annual volume. It is valuable in determining future water supply capacities of the particular community water system sources (wells, springs, etc.). The reliable potable water supply is calculated by adding together the maximum water supply capacity of surface sources, one-half of the maximum yield of wells or their pump capacities (unless otherwise indicated by the system manager), and a percentage of the average annual flow of spring sources. The percentage of the spring source flows ranges between 50% and 100%. The determination of the percentage is based on information obtained concerning the yearly fluctuations of the springs.

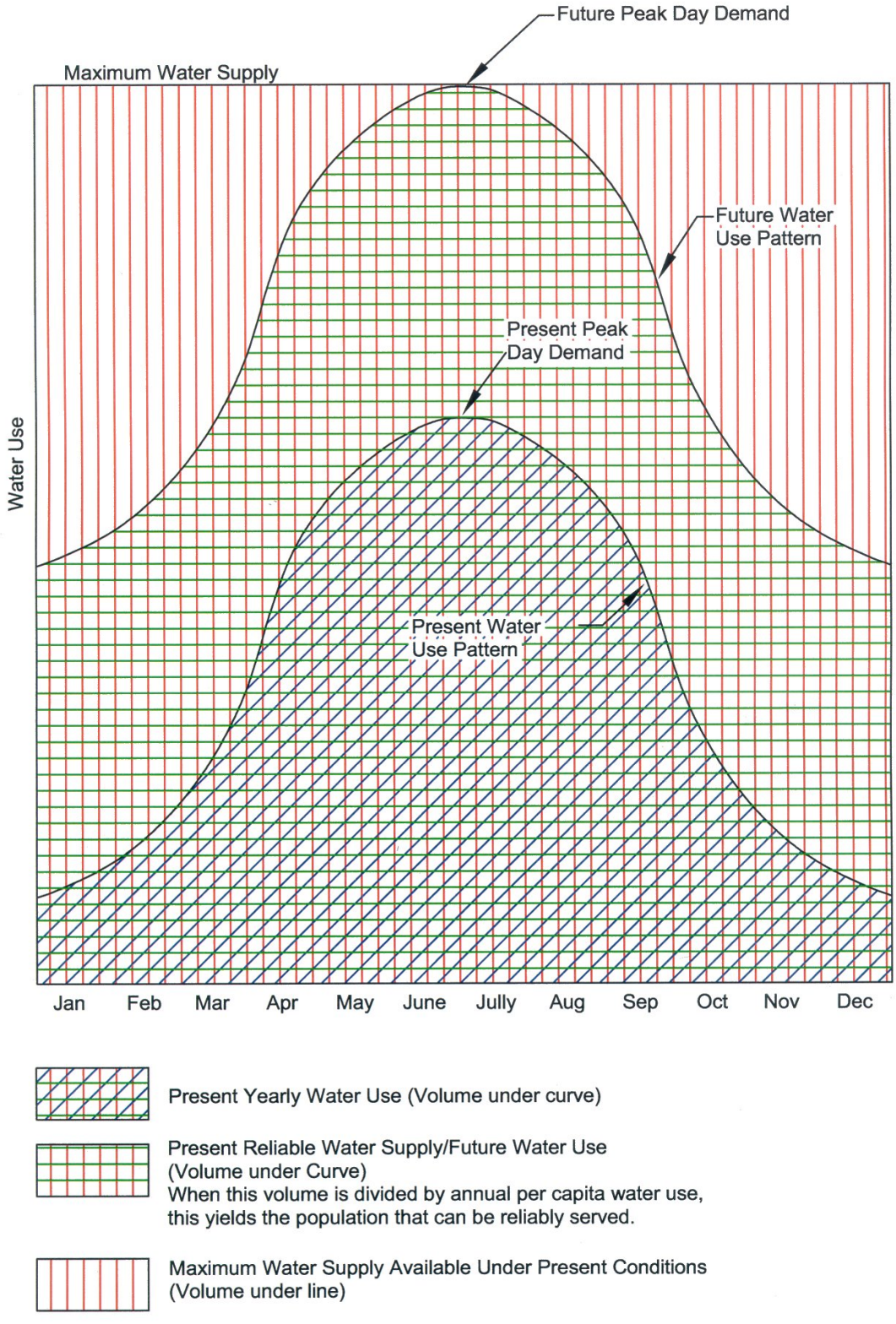
Figure 4, on page 11, graphically presents the relationship between the maximum water supply and the reliable potable water supply of a system. By quantifying the maximum and the reliable potable water supply of a system, the population that a system can potentially support can be determined. The current total yearly water use is the volume under the lower curve (*Present Water Use Pattern*). The future total yearly water use is the volume under the upper curve (*Future Water Use Pattern*). This total is equivalent to the reliable potable water supply.

The maximum water supply under present conditions is the volume under the upper line (*Maximum Water Supply*) in Figure 4. Because this amount is a yearly volume based upon a maximum daily flow rate (limited by the water right or system capacity), the line passes through the peak day demand point on the future water use curve (*Future Peak Day Demand*). Due to this, and the fact that most culinary water system storage tanks are designed to store only about one day's water demand, not all of the total maximum water supply is available to meet future water needs.

Therefore, the reliable potable water supply, rather than the maximum water supply, is the limiting factor in determining when future water demand equals current supplies.

Reliable secondary water supply is defined to be equal to the secondary use determined for each community system. The methodology for calculating secondary use is explained on page 13 under *Residential Use*.

Figure 4. Water Supply and Use Hydrograph



Water Use

Present water use, as defined herein, is the developed water supply that is actually diverted into the distribution system from surface or subsurface sources. Water use is divided into four categories: residential, commercial, institutional and industrial. For comparative purposes, the DWRe chose these categories to correlate with the USGS categories of domestic, commercial, industrial, and mining.

The DWRe's residential category is equivalent to the USGS domestic category and includes water used for both indoor and outdoor purposes at residences. The USGS commercial category is equivalent to the DWRe's combined commercial and institutional categories. The DWRe's commercial category includes water use for retail establishments and businesses. The DWRe's institutional category includes water use for government facilities, military facilities, schools, hospitals, churches, parks, cemeteries, golf courses, etc. The DWRe's industrial category is equivalent to the combined USGS categories of industrial and mining that includes a wide variety of water uses associated with businesses that produce a specific product (including stockwatering).

Residential Use

The staff collects data about the number of residential connections and the amount of water used by those connections from a water system representative. Water use in this category is divided into three subcategories: culinary-outdoor, culinary-indoor, and secondary-outdoor. While most systems will meter the total culinary residential water use, indoor and outdoor use are rarely metered separately. Secondary water use is rarely metered. Therefore, the DWRe usually estimates these subcategory totals.

Typically, culinary indoor use will be estimated first. One method to estimate the indoor use is to review residential meter reading totals for the system from the winter months, if available. Since outdoor watering typically does not occur during the winter months, it can be assumed that the water used in winter months is for indoor use only. The winter water use is then used to determine the total yearly indoor use.

When the above method does not yield a reasonable value for indoor use, the per capita indoor water use for a system can be estimated by using an equation that was developed in a detailed residential study, "Identifying Residential Water Use", completed by the DWRe in 2001. The mathematical equation that was developed is as follows:

$$GPCD_{Indoor} = 90.3 / P_{PH} + 42.3$$

where:

$GPCD_{Indoor}$ = gallons per capita day (per capita indoor water use)

P_{PH} = persons per household (US Census Bureau)

The total yearly indoor water use is then calculated for the system by multiplying the result of the above equation by the current population. Outdoor culinary water use can then be estimated by subtracting the total yearly indoor water use from the given total residential culinary water use.

Because very few entities meter secondary outdoor water use, the DWRe staff estimates the outdoor secondary water use by using the average lot size, percent irrigated, percent of residences that are supplied by separate secondary (pressurized and ditch) irrigation systems, water right-duty rates (volume of water required for turf growth) in the area, and other related information for each system. In determining residential secondary use, care is taken to not include irrigation water use for small pastures or farm fields that can often be found adjacent to residences, particularly in rural communities.

Commercial Use

For most systems, the system operator can separate metered commercial water use data from the total water use. In cases where this data is not available, or is extremely difficult to obtain, the DWRe staff attempts to estimate commercial water use by inventorying commercial businesses in the area and using published commercial water use estimates. The DDW and the Utah State Water Lab, among others, publish these estimates. In some rural communities where there are a relatively small number of commercial connections, the businesses are visited individually by the DWRe staff and asked about their water use.

Some commercial facilities use secondary water to irrigate outside landscapes. This is especially typical for commercial golf courses. Again, it is typical that secondary water is not metered. The DWRe staff estimates this use by multiplying the size of the irrigated area by a water right-duty rate or the evapotranspiration (ET) rate. The ET indicates the amount of water, in inches, necessary for turf growth.

Institutional Use

Institutional water use is water used for city, county, state and federal government facilities, parks, municipal golf courses, schools, hospitals, churches, military facilities, as well as fire hydrant testing and other municipal losses in the water system. Because this water use is often not metered, the process to acquire this data is difficult. The system operator is asked to provide information about city facilities such as the number and size (irrigated acreage) of parks, schools, churches, and municipal golf courses. Water right-duty rates (and/or the ET) are used to calculate the amount of water is needed to irrigate these areas. Estimates of leakage and water use for testing of water system facilities are also included in this category.

Industrial Use

Industrial water use is defined as water used in the production of a product. Therefore, such commercial establishments as dairies, mink farms, and greenhouses, as well as stockwatering, are included in this category, provided a community water system serves them. Industrial water use within community water systems is calculated with the same process used to calculate commercial water use data discussed earlier.

Present Methodology for Non-Community Water Systems

The DWRe staff attempts to contact each non-community system and/or make a personal visit to these systems. Non-community systems rarely meter their water use, so the DWRe staff estimate the annual water use. Questions are asked to determine the type of facility, population served, water source information, irrigation of outside areas, etc. This data, along with information found in water-related publications, is used to determine water use. The maximum and reliable water supplies for these systems are often not available and are not in the scope of this study.

Present Methodology for Self-Supplied Industrial Water Systems

Although self-supplied industries are included in the Non-Community Water Systems category as defined by the DDW, the DWRe has separated them into a separate category due to their importance. The category is equivalent to the DDW's Non-Community, Non-Transient category.

Water use is acquired for self-supplied industries by using data from the DWRi's Industrial Water Use Form and/or electronically submitted data. The DWRi collects annual water use data from most of the major self-supplied industrial water users in the state. This data is confidential. Therefore, the data presented in this M&I study is only presented as county totals. As with other non-community systems, the

maximum and reliable water supplies are often not available and are not in the scope of this study.

Present Methodology for Private Domestic Water Systems

Private domestic systems are residences that are not connected to any public community or non-community water system. They are usually supplied by individual wells. To determine the water use data for this category, the population of those served by private domestic systems is estimated. This population is estimated by subtracting the population served by community water systems from the county population data acquired from the Governor's Office of Planning and Budget (GOPB). The remainder is assumed to be the population that is served by private domestic systems. The per capita water use rate for this category is assumed to be the same as the rate for the public community system residential category for that county. To determine the total water use by private domestic systems, the estimated population is then multiplied by this rate. Again, the maximum and reliable water supplies for private wells are not in the scope of this study.

DEFINITIONS OF WATER TERMS

Water Supply Terms

Water is supplied by a variety of systems for many users. The general term supply is defined as the amount of water available. Municipalities own most of the individual water supply systems. However, in some cases the owner/operator is a private company or a state or federal agency. Thus, a "public" water supply may be either publicly or privately owned. Also, systems may supply treated or untreated water. Following are definitions of some terms used in this study:

Maximum Potable Water Supply - The annual volume of potable (culinary) water which is the lesser of the hydrologic capacity of the water source, the physical capacity of the water system, or the amount allowed by the collective water rights.

Reliable Potable Water Supply - The annual quantity of the maximum water supply that is available to meet peak demands. This is generally calculated as 100% of the maximum supply from surface water sources, 50% of the maximum yield of wells, and between 50% and 100% of the average annual spring flows. When this number is divided by the average per capita usage, the resulting number represents the theoretical maximum population that the water source can serve.

Municipal and Industrial Water Supply - Includes all water (potable and non-potable) supplied for residential, commercial, institutional, light industry, and self-supplied industries. This supply is delivered by public community systems, public non-community (transient and non-transient) systems, self-supplied industrial systems, unregulated Indian water systems and private wells.

Potable Water Supply – Includes water meeting all applicable safe drinking water requirements for residential, commercial, institutional and industrial uses. It is sometimes referred to as culinary, or municipal, water supply.

Public Community Water Supply - Includes potable and non-potable water supplied by either privately or publicly owned community systems which serve at least 15 service connections or 25 individuals year round. Water from public community supplies may be used for both indoor and outdoor uses for residential, commercial, institutional, and industrial purposes.

Public Non-Community Water Supply - Includes potable and non-potable water supplied by either privately or publicly owned systems of two types: transient and non-transient. Transient systems are systems that do not serve 25 of the same non-resident persons per day for more than six months per year. Examples include campgrounds, RV parks, restaurants, convenience stores, etc. Non-transient systems are systems that regularly serve 25 of the same non-resident persons per day for more than six months per year. Examples include churches, schools and industries. This report lists the industrial non-transient systems as self-supplied industries.

Secondary Water Supply – Includes water not meeting safe drinking water requirements. Sometimes referred to as non-potable (non-culinary) water supply. This water is usually delivered by pressurized or open ditch water supply systems for irrigation of privately and publicly owned landscapes, gardens, parks, cemeteries, golf courses and other open areas. These systems, sometimes called "dual" water systems, are installed to provide an alternative to irrigating with culinary water for these outdoor areas. Irrigation companies often provide this water. However, some public community water systems may deliver this water as well. Self-supplied industries may also use secondary water for industrial processes.

Self-Supplied Industrial Supply - Includes potable and non-potable water supplied by individual privately owned industries (usually from their own wells or springs). This category is the equivalent of the DDW's Non-Community, Non-Transient systems category.

Water Use Terms

Water is used in a variety of ways and for many purposes. It is often said that water is "used" when it is diverted, demanded, withdrawn, depleted or consumed. But it is also "used" in place for such things as fish and wildlife habitat, recreation and hydropower production. **Water use in this report is defined as "diverted" water.** A table that includes the basin's M&I water depletions is provided in Appendix E.

In most of the previous water supply terms the word "use" can be inserted where the word "supply" is written to define the current demand associated with those definitions. Some additional water use terms are as follows:

Commercial Use - Use normally associated with small business operations that may include drinking water, food preparation, personal sanitation, facility cleaning and maintenance and irrigation of facility landscapes. Examples include retail businesses, restaurants and hotels.

Industrial Use - Use associated with the manufacturing or production of products. The volume of water used by industrial businesses can be considerably greater than water used by commercial businesses. Examples include manufacturing plants, oil and gas producers, mining companies, mink farms and dairies.

Institutional Use - Use normally associated with general operation of various public agencies and institutions (i.e. schools, municipal buildings, churches) including drinking water, personal sanitation, facility cleaning and maintenance and irrigation of parks, cemeteries, playgrounds, recreational areas, golf courses, and other facilities. The amount of water used by cities for outside irrigation of public areas typically is not metered.

Municipal and Industrial (M&I) Use - Use includes all residential, commercial, institutional, and industrial uses. It includes total uses (potable and non-potable) supplied by public water systems (community and non-community), self-supplied industries, private domestic systems, and secondary irrigation companies.

Private Domestic Use – Use includes water from private wells or springs for use in individual homes, usually in rural areas not accessible to public community water systems.

Residential Use - Use associated with residential cooking, drinking water, washing clothes, miscellaneous cleaning, personal grooming and sanitation, irrigation of lawns, gardens and landscapes, and washing automobiles, driveways and other outside residential facilities. Examples include single-family homes, apartments, duplexes and condominiums.

Other Water Terms

Consumption - Water evaporated, transpired or irreversibly bound in either a physical, chemical or biological process. Consumed water results in a loss of the original water supplied.

Consumptive Use - Losses of water brought about by human endeavors when used for residential, commercial, institutional, industrial, agricultural, power generation, and recreation. Naturally occurring vegetation, fish and wildlife also consumptively use water.

Depletion - Water consumed and made unavailable for return to a given designated area, river system or basin. It is intended to represent the net loss to a system. The terms consumption and depletion are often used interchangeably but are not the same. For example, water exported from a basin is depletion from the basin system but is not consumed in the basin. The exported water is available for use (consumption) in another basin or system. Water diverted to irrigate crops in a given system, but not returned for later use, is depletion. Precipitation that falls on irrigated crops is not considered a part of the supply like surface water and groundwater diversions. For this reason, precipitation falling on and consumed by irrigated crops is not considered as being depletion from the system.

Diversion - Water diverted from supply sources such as streams, lakes, reservoirs or groundwater for a variety of purposes, including cropland irrigation, as well as residential, commercial, institutional and industrial uses.

Withdrawal - Water withdrawn from supply sources such as lakes, streams, reservoirs or groundwater. This term is normally used in association with groundwater withdrawal. The terms *diversion* and *withdrawal* are often used interchangeably. **Water use as presented in this report deals with diversions.**

WATER RIGHTS IN THE CEDAR/BEAVER BASIN

Although a detailed analysis of water rights is not part of this report, a water supply and use study would not be complete without at least a discussion on the current water right regulations in the area. The following discussion was obtained from the DWRi. It explains the current general water right regulations in the Cedar/Beaver Basin with regards to M&I uses. For more details on these areas, please refer: http://www.waterrights.utah.gov/wrinfo/policy/wrareas/default.asp.

Beaver Valley (Area 77)

Surface and ground waters are considered to be fully appropriated at this time. New diversions and uses must be accomplished by change applications based on existing water rights. Changes between surface and underground sources will be critically reviewed to assure hydrologic connection, that underlying rights are not enlarged or that there will be no impairment of other rights. Water rights for the Beaver Mountain and Elk Meadows resort areas are generally restricted to change applications on existing “first priority” rights already established on the Beaver River or its direct tributaries. Applications proposing transfers of rights between the Beaver River and other streams tributary to Beaver Valley are not approved.

Cedar City Valley (Area 73)

Surface and ground waters are considered to be fully appropriated at this time. New diversions and uses must be accomplished by change applications based on existing water rights. The basin is divided into two subareas delineated by State Highway 56 through the valley. No change applications between subareas are allowed. Changes between surface and underground sources will be critically reviewed to assure hydrologic connection, that underlying rights are not enlarged or that there will be no impairment of other rights.

Escalante Valley (Area 71)

Surface waters are considered to be fully appropriated at this time. New surface diversions and uses must be accomplished by change applications based on existing water rights. The basin is divided into two subareas delineated by State Highway 56 through the valley. No change applications between subareas are allowed. Changes between surface and underground sources are generally not allowed.

Most of the area is closed to new appropriations with the exception of the northernmost portion. New groundwater diversions and uses must be accomplished by change applications based on valid existing water rights. For groundwater administration, the area has been divided into five districts, each with some unique policies. For more detailed information about these policies, please refer to DWRi's website at: http://www.waterrights.utah.gov/wrinfo/policy/wrareas/area71.html.

Parowan Valley (Area 75)

Surface and ground waters are considered to be fully appropriated at this time. New diversions and uses must be accomplished by change applications based on existing water rights. The basin is divided into two subareas delineated by the southern boundary line of T32S. No change applications between subareas are allowed. Changes between surface and underground sources will be critically reviewed to assure hydrologic connection, that underlying rights are not enlarged, or that there will be no impairment of other rights.

Water rights for the mountain headwaters and Brian Head resort area are generally restricted to change applications on existing "first priority" rights already on Parowan/Main Creek or Summit Creek. Applications proposing transfers of rights between the Parowan/Main Creek and Summit Creek drainages are not approved.

BEAVER COUNTY M&I WATER SUPPLIES AND USES

The Beaver County portion of the Cedar/Beaver Basin claims Beaver, Milford, and Minersville as its incorporated communities. Within this portion of the basin, there are 4 public community systems, 12 public non-community systems and 5 self-supplied industries. The locations of the public community and non-community systems are shown in Figure 3.

As shown in Table 1, the maximum annual potable water supply for public community systems in this portion of Beaver County is 6,215 acre-feet: about 22% from springs and 78% from wells.

TABLE 1
BEAVER COUNTY
Maximum Potable Water Supplies for Public Community Systems
(Acre-Feet/Year)

WATER SUPPLIER	Springs	Wells	Surface	Total
BEAVER COUNTY				
Beaver City Water System	645.2	1,345.6	0.0	1,990.8
Manderfield Culinary Water Syster	0.0	169.9	0.0	169.9
Milford City Water System	0.0	2,903.4	0.0	2,903.4
Minersville Water System*	724.0	427.1	0.0	1,151.1
BEAVER COUNTY TOTALS	**1,369.2**	**4,846.0**	**0.0**	**6,215.2**

Note: All values represent maximum system source capacities limited by water rights, hydrologic constraints, and/or system constraints.

The reliable potable water supply for public community systems in the Beaver County portion of the Cedar/Beaver Basin is 3,792 acre-feet. The reliable supply is 61% of the maximum supply. The breakdown of this supply is presented in Table 2 on the following page.

TABLE 2
BEAVER COUNTY
Reliable Potable Water Supplies for Public Community Systems
(Acre-Feet/Year)

WATER SUPPLIER	Springs	Wells	Surface	Total
BEAVER COUNTY				
Beaver City Water System	645.2	672.8	0.0	1,318.0
Manderfield Culinary Water System	0.0	85.0	0.0	85.0
Milford City Water System	0.0	1,451.7	0.0	1,451.7
Minersville Water System*	724.0	213.6	0.0	937.5
BEAVER COUNTY TOTALS	**1,369.2**	**2,423.0**	**0.0**	**3,792.2**

* Wells are limited to 50% of their "maximum" capacity for reliable supply when well/p
capacity is the limiting factor. Springs and surface water supplies are equal to their
respective "maximum" capacities.

Table 3, on the following page, shows the breakdown of potable water use for each public community system. This table indicates that for Beaver County, the current annual use of 1,259 acre-feet of water (within the public community systems) is about 33% of the reliable supply.

TABLE 3
BEAVER COUNTY
Water Use for Public Community Systems

WATER SUPPLIER	POTABLE USAGE (Ac-Ft/Yr)						POTABLE PER CAPITA USAGE		
	Residential Indoor Use	Residential Outdoor Use	Commercial Indoor and Outdoor Use	Institutional Indoor and Outdoor Use	Industrial/ Stockwater Indoor and Outdoor Use	Total Potable M & I Use	Population	Average Per Capita Water Use (Ac-Ft/Yr)	Average Per Capita Water Use (GPCPD)
BEAVER COUNTY									
Beaver City Water System	216.1	6.3	207.4	2.5	14.1	446.4	2,650	0.168	150.4
Manderfield Culinary Water System	4.9	15.0	0.0	0.0	6.3	26.2	60	0.437	389.8
Milford City Water System	126.9	180.7	36.3	137.9	1.0	482.8	1,550	0.311	278.1
Minersville Water System	72.1	110.5	1.5	5.9	113.8	303.8	880	0.345	308.2
TOTALS	**420.0**	**312.5**	**245.2**	**146.3**	**135.2**	**1,259.2**	**5,140**	**0.245**	**218.7**
A	B	C	D	E	F	G	H	I	J

A, B, C, D, E, F, H	Input data
G=B+C+D+E+F	Potable Water Use
I=G/H	Average per capita water use
J=I*892.74	Conversion from ac-ft/yr to gpcd

Table 4 presents the annual amount of secondary water used for various categories within the boundaries of the public community systems. In Beaver County, both the municipalities and a separate irrigation company deliver secondary water within the public community systems. Total secondary use is estimated to be 1,426 acre-feet.

TABLE 4
BEAVER COUNTY
Secondary (Non-Potable) Water Use Within Public Community Systems
(Acre-Feet/Year)

WATER SUPPLIER	Residential Use	Commercial Use	Institutional Use	Industrial/ Stockwater Use	Total Public Secondary Use
BEAVER COUNTY					
Beaver City Water System	665.3	0.0	342.0	0.0	1,007.3
Manderfield Culinary Water System	0.0	0.0	0.0	0.0	0.0
Milford City Water System	0.0	0.0	251.9	0.0	251.9
Minersville					
Minersville Irrigation	166.8	0.0	0.0	0.0	166.8
BEAVER COUNTY TOTALS	**832.1**	**0.0**	**593.9**	**0.0**	**1,426.0**

Table 5 presents various per capita rates for the public community system in the Beaver County portion of the Cedar/Beaver Basin.

TABLE 5
BEAVER COUNTY
Average Per Capita Water Use
for Public Community Systems

CATEGORY	Average Per Capita Use (Ac-Ft/Yr)	Average Per Capita Use (GPCD)
Residential Potable Use	0.143	127
Residential Potable Plus Secondary Use	0.304	272
Total Potable Use	0.245	219
Total Potable Plus Secondary Use	0.522	466

Note: Total potable categories include residential, commercial, instiitutional and industrial uses.

Table 6 indicates water use for public non-community, self-supplied industries and private domestic systems in this portion of the Cedar/Beaver Basin. Several large self-supplied industries are in this area. All of these uses amount to about 2,265 acre-feet of potable water and 3,629 acre-feet of secondary water.

TABLE 6
BEAVER COUNTY
Water Use for Public Non-Community Systems,
Self-Supplied Industries, and Private Domestic Systems
(Acre-Feet/Year)

Non-Community System	POTABLE USAGE					Total Secondary Water Use
	Residential Use	Commercial Use	Institutional Use	Industrial/ Stockwater Use	Total Potable Use	
BEAVER COUNTY						
Non-Communties						
Anderson Meadow Campground	0.0	0.0	0.1	0.0	0.1	0.0
Beaver Camperland	0.0	14.9	0.0	0.0	14.9	0.0
Beaver KOA Campground	0.2	6.8	0.0	0.0	7.0	0.0
Big Flat Guard Station	0.0	0.0	0.1	0.0	0.1	0.0
Elk Meadows SSD	3.8	1.8	0.0	0.0	5.6	0.0
Kan Kun Restaurant	0.0	0.5	0.0	0.0	0.5	0.0
Kents Lake Campground	0.0	0.0	0.1	0.0	0.1	0.0
Little Cottonwood Campground	0.0	0.0	10.3	0.0	10.3	0.0
Little Reservoir Campground	0.0	0.0	0.1	0.0	0.1	0.0
Mahogany Cove Campground	0.0	0.0	0.1	0.0	0.1	0.0
Minersville Lake County Park	0.0	0.0	1.5	0.0	1.5	0.0
Ponderosa Picnic Ground	0.0	0.0	0.1	0.0	0.1	0.0
Total	**4.0**	**24.0**	**12.4**	**0.0**	**40.4**	**0.0**
Self-Supplied Industries*	0.0	0.0	0.0	2,060.7	2,060.7	3,629.0
Private Domestic	163.9	0.0	0.0	0.0	163.9	0.0
BEAVER COUNTY TOTALS	**167.9**	**24.0**	**12.4**	**2,060.7**	**2,265.0**	**3,629.0**

* Basin Perlite Company, Circle Four Corporation, Intermountain Geothermal, Twin Mountain Rock (Kiewit Mining), Utah Municipal Power Agency

Collectively, the total potable M&I water use from all systems in this portion of the Cedar/Beaver Basin is about 3,524 acre-feet, while secondary use is 5,055 acre-feet; giving a total M&I water use of 8,579 acre-feet. The data for the public community systems in Beaver County that is presented in the previous tables is included in Appendix A.

IRON COUNTY M&I WATER SUPPLIES AND USES

The Iron County portion of the Cedar/Beaver Basin claims Brian Head, Cedar City, Enoch, Paragonah, and Parowan as its incorporated communities. Within this portion of the basin, there are 24 public community systems, 9 public non-community systems, and 3 self-supplied industries in this area. The locations of the public community and non-community systems are shown in Figure 3.

TABLE 7
IRON COUNTY
Maximum Potable Water Supplies for Public Community Systems
(Acre-Feet/Year)

WATER SUPPLIER	Springs	Wells*	Surface	Total
IRON COUNTY				
Angus Water Co., Inc.	0.0	96.2	0.0	96.2
Brian Head Water System	331.0	784.7	0.0	1,115.7
Buena Vista Community	0.0	135.0	0.0	135.0
Cedar City Waterworks System	3,750.6	10,368.4	0.0	14,119.0
Cedar Highlands Subdivision	49.0	0.0	0.0	49.0
Cross Hollow Hills Subdivision	0.0	253.3	0.0	253.3
Eagle Valley Ranch	0.0	30.0	0.0	30.0
Enoch City Water System	0.0	1,515.0	0.0	1,515.0
Escalante Valley Water System	0.0	32.2	0.0	32.2
Fifetown Water System	N/A	N/A	N/A	N/A
Flying L Subdivision	0.0	60.0	0.0	60.0
Irontown	0.0	81.0	0.0	81.0
Meadows Ranch	0.0	235.0	0.0	235.0
Mid Valley Estates	0.0	347.4	0.0	347.4
Monte Vista Com. Water Co.	0.0	83.6	0.0	83.6
Mt. View SSD	0.0	100.0	0.0	100.0
New Castle Water Company**	0.0	124.0	0.0	124.0
Old Meadow Water Co.	0.0	93.7	0.0	93.7
Paragonah Town	415.5	0.0	0.0	415.5
Park West Water Company	0.0	74.0	0.0	74.0
Parowan Waterworks System	193.6	1,019.0	0.0	1,212.6
Rainbow Ranchos	0.0	149.7	0.0	149.7
Spring Creek Water Users	0.0	110.0	0.0	110.0
Summit SSD	0.0	161.3	0.0	161.3
IRON COUNTY TOTALS	**4,739.7**	**15,853.3**	**0.0**	**20,593.0**

Note: All values represent maximum system source capacities limited by water rights, hydrologic constraints, and/or system constraints.

* Fifetown and Irontown "Source Capacity" not available; therefore, Irontown water rights considered "Maximum Supply" total. Fifetown water rights amount not available.

** Water right total includes springs and wells;

As shown in Table 7, on the previous page, the maximum annual potable water supply for public community systems in this portion of Iron County is 20,593 acre-feet: about 23% from springs and 77% from wells.

The reliable potable water supply for public community systems in the Iron County portion of the Cedar/Beaver Basin is 13,315 acre-feet. The reliable supply is 65% of the maximum supply. The breakdown of this supply is presented in Table 8.

TABLE 8
IRON COUNTY
Reliable Potable Water Supplies for Public Community Systems
(Acre-Feet/Year)

WATER SUPPLIER	Springs	Wells*	Surface	Total
IRON COUNTY				
Angus Water Co., Inc.*	0.0	66.0	0.0	66.0
Brian Head Water System	331.0	392.3	0.0	723.3
Buena Vista Community*	0.0	113.1	0.0	113.1
Cedar City Waterworks System	3,750.6	5,184.2	0.0	8,934.8
Cedar Highlands Subdivision	49.0	0.0	0.0	49.0
Cross Hollow Hills Subdivision	0.0	126.6	0.0	126.6
Eagle Valley Ranch*	0.0	16.6	0.0	16.6
Enoch City Water System*	0.0	1,127.2	0.0	1,127.2
Escalante Valley Water System	0.0	16.1	0.0	16.1
Fifetown Water System**	N/A	43.6	N/A	43.6
Flying L Subdivision	0.0	30.0	0.0	30.0
Irontown	0.0	40.5	0.0	40.5
Meadows Ranch*	0.0	157.3	0.0	157.3
Mid Valley Estates	0.0	173.7	0.0	173.7
Monte Vista Com. Water Co.*	0.0	48.7	0.0	48.7
Mt. View SSD	0.0	50.0	0.0	50.0
New Castle Water Company*	0.0	168.1	0.0	168.1
Old Meadow Water Co.	0.0	46.8	0.0	46.8
Paragonah Town	415.5	0.0	0.0	415.5
Park West Water Company	0.0	37.0	0.0	37.0
Parowan Waterworks System	193.6	509.5	0.0	703.1
Rainbow Ranchos	0.0	74.9	0.0	74.9
Spring Creek Water Users	0.0	55.0	0.0	55.0
Summit SSD*	0.0	98.0	0.0	98.0
IRON COUNTY TOTALS	**4,739.7**	**8,575.2**	**0.0**	**13,314.9**

* Reliable supply considered to be equal to metered/calculated use.
** No information on water supplies or water rights for Fifetown was available.

Table 9, on the following page, shows the breakdown of potable water use for each public community system. This table indicates that for Iron County, the current annual use of 9,385 acre-feet of water (within the public community systems) is about 70% of the reliable supply.

TABLE 9
IRON COUNTY
Water Use for Public Community Systems

WATER SUPPLIER	POTABLE USAGE (Ac-Ft/Yr)						POTABLE PER CAPITA USAGE		
	Residential Indoor Use	Residential Outdoor Use	Commercial Indoor and Outdoor Use	Institutional Indoor and Outdoor Use	Industrial/ Stockwater Indoor and Outdoor Use	Total Potable M & I Use	Population	Average Per Capita Water Use (Ac-Ft/Yr)	Average Per Capita Water Use (GPCPD)
IRON COUNTY									
Angus Water Co., Inc.	9.6	43.0	0.0	12.0	0.6	65.2	120	0.543	485.1
Brian Head Water System	13.2	0.0	306.8	1.0	131.0	452.0	120	3.767	3,362.7
Buena Vista Community	28.8	82.8	0.0	0.8	0.7	113.1	360	0.314	280.5
Cedar City Waterworks System	1,756.3	2,287.5	1,233.5	690.0	167.3	6,134.6	21,990	0.279	249.0
Cedar Highlands Subdivision	35.0	0.0	0.0	0.0	0.0	35.0	20	1.750	1,562.3
Cross Hollow Hills Subdivision	14.4	22.5	0.0	0.4	1.0	38.3	180	0.213	190.0
Eagle Valley Ranch	6.4	9.6	0.0	0.0	0.6	16.6	80	0.208	185.2
Enoch City Water System	347.5	673.4	4.6	98.9	2.8	1,127.2	3,760	0.300	267.6
Escalante Valley Water System	8.8	2.0	0.0	0.0	0.0	10.8	110	0.098	87.7
Fifetown Water System	20.0	22.8	0.0	0.0	0.8	43.6	250	0.174	155.7
Flying L Subdivision	4.8	7.2	0.0	0.0	0.2	12.2	60	0.203	181.5
Irontown	5.6	0.0	0.0	0.0	0.0	5.6	70	0.080	71.4
Meadows Ranches	36.7	120.0	0.0	0.1	0.5	157.3	320	0.492	438.8
Mid Valley Estates	50.3	92.6	0.0	0.7	0.6	144.2	630	0.229	204.3
Monte Vista Com. Water Co.	13.6	32.7	0.0	2.0	0.4	48.7	170	0.286	255.7
Mt. View SSD	15.2	25.2	0.0	0.0	0.2	40.6	190	0.214	190.8
Newcastle Water Company	29.6	45.6	1.7	22.7	68.5	168.1	370	0.454	405.6
Old Meadows Water Co.	2.4	16.0	0.0	0.0	0.5	18.9	30	0.630	562.4
Paragonah Town	53.8	30.0	0.0	25.5	1.4	110.7	480	0.231	205.9
Park West Water Company	9.6	18.1	0.0	0.6	0.7	29.0	120	0.242	215.7
Parowan Waterworks System	219.5	124.9	75.8	18.8	2.7	441.7	2,630	0.168	149.9
Rainbow Ranchos	24.2	9.1	0.0	2.7	0.8	36.8	200	0.184	164.3
Spring Creek Water Users	21.2	14.3	0.0	0.0	1.4	36.9	190	0.194	173.4
Summit SSD	16.0	56.7	0.0	10.1	15.2	98.0	200	0.490	437.4
IRON COUNTY TOTALS	**2,742.5**	**3,736.0**	**1,622.4**	**886.3**	**397.9**	**9,385.1**	**32,650**	**0.287**	**256.6**
A	B	C	D	E	F	G	H	I	J

A, B, C, D, E, F, H	Input data
G=B+C+D+E+F	Potable Water Use
I=G/H	Average per capita water use
J=I*892.74	Conversion from ac-ft/yr to gpcd

Table 10 presents the amount of secondary water used for various categories within the boundaries of the Kanarraville public community system. A separate irrigation company, Kanarraville Reservoir & Irrigation Company, delivers secondary water to customers. Total secondary water use is 1,907 acre-feet.

TABLE 10
IRON COUNTY
Secondary (Non-Potable) Water Use Within Public Community Systems
(Acre-Feet/Year)

WATER SUPPLIER	Residential Use	Commercial Use	Institutional Use	Industrial/ Stockwater Use	Public Total Secondary Use
IRON COUNTY					
Angus Water Co., Inc.	0.0	0.0	0.0	0.0	0.0
Brian Head Water System	0.0	0.0	0.0	0.0	0.0
Buena Vista Community	0.0	0.0	0.0	0.0	0.0
Cedar City Waterworks System					
City Operated	0.0	0.0	519.6	0.0	519.6
South & West Field	602.8	0.0	0.0	0.0	602.8
Cedar Highlands Subdivision	0.0	0.0	0.0	0.0	0.0
Cross Hollow Hills Subdivision	0.0	0.0	0.0	0.0	0.0
Eagle Valley Ranch	0.0	0.0	0.0	0.0	0.0
Enoch City Water System	0.0	0.0	0.0	0.0	0.0
Escalante Valley Water System	0.0	0.0	0.0	0.0	0.0
Fifetown Water System	0.0	0.0	0.0	0.0	0.0
Flying L Subdivision	0.0	0.0	0.0	0.0	0.0
Irontown	0.0	0.0	0.0	0.0	0.0
Meadows Ranches	0.0	0.0	0.0	0.0	0.0
Mid Valley Estates	0.0	0.0	0.0	0.0	0.0
Monte Vista Com. Water Co.	0.0	0.0	0.0	0.0	0.0
Mt. View SSD	0.0	0.0	0.0	0.0	0.0
Newcastle Water Company	30.4	0.0	0.0	0.0	30.4
Old Meadows Water Co.	0.0	0.0	0.0	0.0	0.0
Paragonah Town					
Paragonah Canal Company	145.0	0.0	14.0	0.0	159.0
Park West Water Company	0.0	0.0	0.0	0.0	0.0
Parowan Waterworks System	519.2	0.0	60.0	0.0	579.2
Rainbow Ranchos	0.0	0.0	0.0	0.0	0.0
Spring Creek Water Users	0.0	0.0	0.0	0.0	0.0
Summit SSD					
Summit Irr. Stock Co.	16.4	0.0	0.0	0.0	16.4
IRON COUNTY TOTALS	**1,313.8**	**0.0**	**593.6**	**0.0**	**1,907.4**

Table 11 presents various per capita rates for the public community system in the Iron County portion of the Cedar/Beaver Basin.

TABLE 11
IRON COUNTY
Average Per Capita Water Use
for Public Community Systems

CATEGORY	Average Per Capita Use (Ac-Ft/Yr)	Average Per Capita Use (GPCD)
Residential Potable Use	0.198	177
Residential Potable Plus Secondary Use	0.198	177
Total Potable Use	0.287	257
Total Potable Plus Secondary Use	0.287	257

Note: Total potable categories include residential, commercial, institiutional and industrial uses.

Table 12, on the following page, indicates annual water use for public non-community systems, self-supplied industries, and private domestic systems in this portion of the Cedar/Beaver Basin. Cedar Breaks National Park Monument is among the 9 listed non-community systems. All of these uses amount to 1,294 acre-feet of potable water and 1,794 acre-feet of secondary water.

TABLE 12
IRON COUNTY
Water Use for Public Non-Community Systems,
Self-Supplied Industries, and Private Domestic Systems
(Acre-Feet/Year)

Non-Community System	POTABLE USAGE					Total Secondary Water Use
	Residential Use	Commercial Use	Institutional Use	Industrial/ Stockwater Use	Total Potable Use	
IRON COUNTY						
Non-Communities						
Cedar Breaks National Monument	0.2	0.0	19.7	0.0	19.9	0.0
Cedar Canyon Campground	0.0	0.0	0.1	0.0	0.1	0.0
Deer Haven Campground	0.0	0.0	0.3	0.0	0.3	0.0
Escalante Valley School	0.0	0.0	21.4	0.0	21.4	0.0
Lunt Park State Highway Rest Stop	0.0	0.0	32.1	0.0	32.1	0.0
Rainbow Meadows Ranchos	0.2	0.0	0.0	0.0	0.2	0.0
Sunshine Truck Stop	0.2	3.7	0.0	0.0	3.9	0.0
Thunder Ridge Scout Camp	0.0	0.0	0.4	0.0	0.4	0.0
Woods Ranch	0.0	0.0	0.1	0.0	0.1	0.0
Total	0.6	3.7	74.1	0.0	78.4	0.0
Self-Supplied Industries*	0.0	0.0	0.0	596.0	596.0	1,794.0
Private Domestic	619.1	0.0	0.0	0.0	619.1	0.0
IRON COUNTY TOTALS	**619.7**	**3.7**	**74.1**	**596.0**	**1,293.5**	**1,794.0**

***American Pacific Corp (Western Electrochemical Company), Milgro New Castle, Inc., Circle Four Blue Mountain South

Collectively, the total potable M&I water use from all systems in this portion of the Cedar/Beaver Basin is about 10,679 acre-feet, while secondary use is 3,701 acre-feet; giving a total M&I water use of 14,380 acre-feet. The data for the public community system in Iron County that is presented in the previous tables is included in Appendix B.

MILLARD COUNTY M&I WATER SUPPLIES AND USES

The Millard County portion of the Cedar/Beaver Basin includes no incorporated communities. Within this area, there are no public community systems or self-supplied industries. There are 2 public non-community systems and only a few private domestic wells. The locations of the public non-community systems are shown in Figure 3.

Table 13, indicates annual water use for public non-community systems and private domestic systems in this portion of the Cedar/Beaver Basin. Historic LDS Cove Fort is among the 2 listed non-community systems. The non-community water use amounts to 55 acre-feet of potable water and 6 acre-feet of secondary water.

TABLE 13
MILLARD COUNTY
Water Use for Public Non-Community Systems,
Self-Supplied Industries and Private Domestic Systems
(Acre-Feet/Year)

Non-Community System	POTABLE USAGE (Ac-Ft/Yr)					Total Secondary Water Use
	Residential Use	Commercial Use	Institutional Use	Industrial/ Stockwater Use	Total Potable Use	
MILLARD COUNTY						
Non-Communities						
Cove Fort Chevron	1.7	5.7	0.0	0.0	7.4	0.0
Cove Fort LDS Historic	1.3	0.0	44.5	0.0	45.8	6.4
Total	3.0	5.7	44.5	0.0	53.2	6.4
Self-Supplied Industries	0.0	0.0	0.0	0.0	0.0	0.0
Private Domestic	2.0	0.0	0.0	0.0	2.0	0.0
MILLARD COUNTY TOTALS	**5.0**	**5.7**	**44.5**	**0.0**	**55.2**	**6.4**

Since there are no public community systems in the Cedar/Beaver portion of Millard County, the total potable M&I water use of all systems in this portion of the Cedar/Beaver Basin is 55 acre-feet, while secondary use is 6 acre-feet; giving a total M&I water use of 61 acre-feet.

WASHINGTON COUNTY M&I WATER SUPPLIES AND USES

The Washington County portion of the Cedar/Beaver Basin includes the incorporated community of Enterprise. Within this area there is 1 public community systems, 1 public non-community systems, and a few private domestic wells. There are no self-supplied industries in this area. Locations of the public community and non-community systems are shown in Figure 3.

As shown in Table 14, the maximum annual potable water supply for public community systems in the Cedar/Beaver portion of Washington County is 985 acre-feet; 28% from springs and 72% from wells.

TABLE 14
WASHINGTON COUNTY
Maximum Potable Water Supplies for Public Community Systems
(Acre-Feet/Year)

WATER SUPPLIER	Springs	Wells	Surface	Total
WASHINGTON COUNTY				
Enterprise	277.4	707.7	0.0	985.1
WASHINGTON COUNTY TOTALS	**277.4**	**707.7**	**0.0**	**985.1**

Note: All values represent maximum system source capacities limited by

The reliable potable water supply for public community systems in the Washington County portion of the Cedar/Beaver Basin was determined to be equal to the current annual potable use. Therefore, the reliable potable supply is 632 acre-feet or 64% of the maximum supply. The breakdown of this supply is indicated in Table 15.

TABLE 15
WASHINGTON COUNTY
Reliable Potable Water Supplies for Public Community Systems
(Acre-Feet/Year)

WATER SUPPLIER	Springs	Wells	Surface	Total
WASHINGTON COUNTY				
Enterprise*	277.4	354.1	0.0	631.5
WASHINGTON COUNTY TOTALS	**277.4**	**354.1**	**0.0**	**631.5**

* Reliable supply considered to be equal to metered/calculated use.

Table 16 presents the breakdown of the potable water use for the public community system. The current annual potable use is 632 acre-feet of water.

TABLE 16
WASHINGTON COUNTY
Water Use for Public Community Systems

WATER SUPPLIER	POTABLE USAGE (Ac-Ft/Yr)						POTABLE PER CAPITA USAGE		
	Residential Indoor Use	Residential Outdoor Use	Commercial Indoor and Outdoor Use	Institutional Indoor and Outdoor Use	Industrial/ Stockwater Indoor and Outdoor Use	Total Potable M & I Use	Population	Average Per Capita Water Use (Ac-Ft/Yr)	Average Per Capita Water Use (GPCPD)
WASHINGTON COUNTY									
Enterprise	110.8	340.2	14.1	164.8	1.6	631.5	1,360	0.464	414.5
TOTALS	**110.8**	**340.2**	**14.1**	**164.8**	**1.6**	**631.5**	**1,360**	**0.464**	**414.5**
A	B	C	D	E	F	G	H	I	J

A, B, C, D, E, F, H	Input data
G=B+C+D+E+F	Potable Water Use
I=G/H	Average per capita water use
J=I*892.74	Conversion from ac-ft/yr to gpcd

There currently is no secondary use within the public community system of Enterprise.

Various per capita rates for the public community system in the Washington County portion of the Cedar/Beaver Basin are given in Table 17, on the following page.

TABLE 17
WASHINGTON COUNTY
Average Per Capita Water Use
for Public Community Systems

CATEGORY	Average Per Capita Use (Ac-Ft/Yr)	Average Per Capita Use (GPCD)
Residential Potable Use	0.332	296.0
Residential Potable Plus Secondary Use	0.332	296.0
Total Potable Use	0.464	414.5
Total Potable Plus Secondary Use	0.464	414.5

Note: Total potable categories include residential, commercial, institiutional and industrial uses.

Table 18 indicates water use for public non-community and private domestic systems in this portion of the Cedar/Beaver Basin. All of these uses amount to about 3 acre-feet of potable water.

TABLE 18
WASHINGTON COUNTY
Water Use for Public Non-Community Systems, Self-Supplied Industries, and Private Domestic Systems (Acre-Feet/Year)

Non-Community System	POTABLE USAGE					Total Secondary Water Use
	Residential Use	Commercial Use	Institutional Use	Industrial/ Stockwater Use	Total Potable Use	
WASHINGTON COUNTY						
Non-Communities						
Honeycomb Rocks Campground	0.0	0.0	0.1	0.0	0.1	0.0
Self-Supplied Industries	0.0	0.0	0.0	0.0	0.0	0.0
Private Domestic	3.3	0.0	0.0	0.0	3.3	0.0
WASHINGTON COUNTY TOTALS	**3.3**	**0.0**	**0.1**	**0.0**	**3.4**	**0.0**

Collectively, the total potable M&I water use for all systems in Washington County is 635 acre-feet. There is no M&I non-potable use in this area. This amounts to a total M&I water use of 635 acre-feet for the county. The data for the public community system in Washington County presented in the previous tables is included in Appendix C.

APPENDIX A

BEAVER COUNTY
DETAILED DESCRIPTION
PUBLIC COMMUNITY WATER SYSTEMS

Beaver County per Capita (gpcd)

$GPCD_{Indoor} = 90.3 / P_{PH} + 42.3$

$P_{PH\ (Iron)} = 2.93$

$GPCD_{Indoor} = (90.3 / 2.93) + 42.3 =$ **73.1 gpcd**

BEAVER

Population = 2,650
Total number of connections = 1,283
Residential connections = 1,120
Commercial connections = 127
Institutional connections = 7
Industrial/Stockwater connections = 29
Average number of people per residential connection = 2.37
Average lot size = N/A; 0.15 acre irrigated area per lot (1994 report)
Percent lot irrigated = N/A
Domestic Waste Water = Lagoons

A. Water Supply

1. **Source Capacity:** Springs = 645.2 ac-ft/yr
   Wells = 5,000.3 ac-ft/yr
   Surface = None
2. **Water Rights:** Springs = 1,448.0 ac-ft/yr
   Wells = 1,345.6 ac-ft/yr
   Surface = None
3. **Maximum Potable Water Supply:** 645.2 ac-ft/yr (Springs) + 1,345.6 ac-ft/yr (Wells) = 1,990.8 ac-ft/yr
4. **Reliable Potable Water Supply:** 645.2 ac-ft/yr (Springs) + 672.8 ac-ft/yr (Wells) = 1,318.0 ac-ft/yr

B. Primary Water Use

1. **Residential Indoor:** ((57,819 + 5,233,330 + 654,450 + 34,950)gal/(31 days))/(2,650 people) = 72.8 gpcd; (2,650 people)(72.8 gpcd)(365 days)(1 ac-ft/325,851 gal) = 216.1 ac-ft (estimate)
2. **Residential Outdoor:** Using 2001 #'s - 71,708,676 gal/1,108 conn. = 64,719 gal/conn Total residential = (64,719 gal/conn)(1,120 conn)(1 ac-ft/325,851 gal) = 222.4 ac-ft; Residential outdoor = 222.4 ac-ft (total res) – 216.1 ac-ft (res in) = 6.3 ac-ft (estimate)
3. **Institutional Indoor and Outdoor:** (808,920 gal)(1 ac-ft/325,851 gal) = 2.5 ac-ft (given)
4. **Commercial Indoor and Outdoor:** (67,579,220 gal)(1 ac-ft/325,851 gal) = 207.4 ac-ft (given)
5. **Industrial/Stockwater Indoor and Outdoor:** (4,591,327 gal)(1 ac-ft/325,851 gal) = 14.1 ac-ft (given)

C. Secondary Water Use

1. **Residential:** (1,120 conn)(99% use sec)(0.15 irr ac)(4.0 ac-ft/ac) = 665.3 ac-ft (estimate)
2. **Institutional:** (85.5 acres)(4.0 ac-ft/ac) = 342.0 ac-ft (estimate)
3. **Commercial:** Negligible
4. **Industrial/Stockwater:** None

MANDERFIELD

Population = 60
Total number of connections = 15
Residential connections = 15
Commercial connections = 0
Institutional connections = 0
Industrial/Stockwater connections = 0
Average number of people per residential connection = 4.00
Average lot size = N/A; 0.25 acre irrigated area per lot
Percent lot irrigated = N/A
Domestic Waste Water = Septic tanks

A. Water Supply

1. **Source Capacity:** Springs = None
   Wells = 322.6 ac-ft/yr
   Surface = None

2. **Water Rights:** Springs = None
   Wells = 169.9 ac-ft/yr
   Surface = None

3. **Maximum Potable Water Supply:** 169.9 ac-ft/yr (Wells)

4. **Reliable Potable Water Supply:** 85.0 ac-ft/yr (Wells) = 85.0 ac-ft/yr

B. Primary Water Use

1. **Residential Indoor:** (60 people)(73.1 gpcd)(365 days)(1 ac-ft/325,851 gal) = 4.9 ac-ft (estimate)
2. **Residential Outdoor:** (15 conn)(0.25 irr ac/conn)(4.0 ac-ft/ac) = 15.0 ac-ft (estimate)
3. **Institutional Indoor and Outdoor:** None
4. **Commercial Indoor and Outdoor:** None
5. **Industrial/Stockwater Indoor and Outdoor:** (225 head)(25 gal/head/day)(365 days)(1 ac-ft/325,851 gal) = 6.3 ac-ft (estimate)

C. Secondary Water Use

1. **Residential:** None
2. **Institutional:** None
3. **Commercial:** None
4. **Industrial/Stockwater:** None

MILFORD

Population = 1,550
Total number of connections = 655
Residential connections = 600
Commercial connections = 45
Institutional connections = 5
Industrial/Stockwater connections = 5
Average number of people per residential connection = 2.58
Average lot size = N/A
Percent lot irrigated = N/A
Domestic Waste Water = Lagoons

A. Water Supply

1. **Source Capacity:** Springs = None
   Wells = 2,903.4 ac-ft/yr
   Surface = None

2. **Water Rights:** Springs = None
   Wells = 3,235.6 ac-ft/yr
   Surface = None

3. **Maximum Potable Water Supply:** 2,903.4 ac-ft/yr (Wells)

4. **Reliable Potable Water Supply:** 1451.7 ac-ft/yr (Wells) = 1451.7 ac-ft/yr

B. Primary Water Use

1. **Residential Indoor:** (1,550 people)(73.1 gpcd)(365 days)(1 ac-ft/325,851 gal) = 126.9 ac-ft
2. **Residential Outdoor:** Total residential = (1,399,000 + 1,714,000 + 91,817,228 + 5,333,186 + 283,006)gal(1 ac-ft/325,851 gal) = 308.6 ac-ft (given); Residential outdoor = 308.6 ac-ft (total res) – 126.9 ac-ft (res in) – 1.0 ac-ft (stock/ind) = 180.7 ac-ft (estimate)
3. **Institutional Indoor and Outdoor:** (41,601,300 + 3,341,030)gal(1 ac-ft/325,851 gal) = 137.9 ac-ft (given)
4. **Commercial Indoor and Outdoor:** (6,354,207 + 1,996,100 + 1,453,000 + 1,541,000 + 489,000)gal(1 ac-ft/325,851 gal) = 36.3 ac-ft (given)
5. **Industrial/Stockwater Indoor and Outdoor:** (25 head)(25 gal/head/day)(365 days)(1 ac-ft/325,851 gal) = 1.0 ac-ft (estimate)

C. Secondary Water Use

1. **Residential:** None
2. **Institutional:** (41,668,700 + 40,390,200)gal(1 ac-ft/325,851 gal) = 251.9 ac-ft (given)
3. **Commercial:** None
4. **Industrial/Stockwater:** None

MINERSVILLE

Population = 880
Total number of connections = 309
Residential connections = 278
Commercial connections = 1
Institutional connections = 4
Industrial/Stockwater connections = 28
Average number of people per residential connection = 3.17
Average lot size = 0.5 acre
Percent lot irrigated = 50%
Domestic Waste Water = Lagoons

A. Water Supply

1. **Source Capacity:** Springs = 725.9 ac-ft/yr
   Wells = 967.8 ac-ft/yr
   Surface = None

2. **Water Rights:** Springs = 724.0 ac-ft/yr (Springs & Wells)
   Wells = 427.1 ac-ft/yr
   Surface = None

3. **Maximum Potable Water Supply:** 724.0 ac-ft/yr (Springs & Wells) +
   427.1 ac-ft/yr (Wells) = 1,151.1 ac-ft/yr

4. **Reliable Potable Water Supply:** 724.0 ac-ft/yr (Springs & Wells) +
   213.6 ac-ft/yr (Wells) = 937.5 ac-ft/yr

B. Primary Water Use

1. **Residential Indoor:** (880 people)(73.1 gpcd)(365 days)(1 ac-ft/325,851 gal) = 72.1 ac-ft (estimate)
2. **Residential Outdoor:** Total use = (61,618,740 gal)(1 ac-ft/325,851 gal) = 189.1 ac-ft (given). Residential outdoor = 189.1 ac-ft (total use) – 72.1 ac-ft (res in) – 1.5 ac-ft (comm) – 5.0 ac-ft (inst) = 110.5 ac-ft (estimate)
3. **Institutional Indoor and Outdoor:** school - (306,300 gal)(1 ac-ft/325,851 gal) = 0.9 ac-ft (given)
   Post office, church, library – say 1.0 acre for inside, say 1.0 acres outside; (1.0 ac)(4.0 ac-ft/ac) = 4.0 ac-ft = 5.0 ac-ft (total estimate)
   Total = 0.9 ac-ft + 5.0 ac-ft = 5.9 ac-ft (estimate)
4. **Commercial Indoor and Outdoor:** 1.5 ac-ft (estimate)
5. **Industrial/Stockwater Indoor and Outdoor:** (37,069,324 gal)(1 ac-ft/325,851 gal) = 113.8 ac-ft (given)

MINERSVILLE (continued)

C. Secondary Water Use

1. **Residential:** (278 conn)(60% use sec)(0.5 ac/conn)(50% irr ac/ac)(4.0 ac-ft/ac) = 166.8 ac-ft (estimate)
2. **Institutional:** None
3. **Commercial:** None
4. **Industrial/Stockwater:** None

APPENDIX B

IRON COUNTY
DETAILED DESCRIPTION
PUBLIC COMMUNITY WATER SYSTEMS

Beaver County per Capita (gpcd)

$GPCD_{Indoor} = 90.3 / P_{PH} + 42.3$

$P_{PH\ (Iron)} = 2.93$

$GPCD_{Indoor} = (90.3 / 2.93) + 42.3 =$ **73.1 gpcd**

ANGUS

Population = 120
Total number of connections = 43
Residential connections = 43
Commercial connections = 0
Institutional connections = 0
Industrial/Stockwater connections = 0
Average number of people per residential connection = 2.79
Average lot size = 5.0 acres
Percent lot irrigated = 5%
Domestic Waste Water = Septic tanks

A. Water Supply

1. **Source Capacity:** Springs = None
   Wells = 645.2 ac-ft/yr
   Surface = None

2. **Water Rights:** Springs = None
   Wells = 96.2 ac-ft/yr
   Surface = None

3. **Maximum Potable Water Supply:** 96.2 ac-ft/yr (Wells)

4. **Reliable Potable Water Supply:** 66.0 ac-ft/yr (Wells)

B. Primary Water Use

1. **Residential Indoor:** (120 people)(71.3 gpcd)(365 days)(1 ac-ft/325,851 gal) = 9.6 ac-ft (estimate)
2. **Residential Outdoor:** (43 conn)(0.25 irr ac/conn)(4.0 ac-ft/ac) = 43.0 ac-ft (estimate)
3. **Institutional Indoor and Outdoor:** (3.0 acres)(4.0 ac-ft/ac) = 12.0 ac-ft (estimate)
4. **Commercial Indoor and Outdoor:** None
5. **Industrial/Stockwater Indoor and Outdoor:** ((21 head)(25 gal/head/day) + (4 head)(10 gal/head/day))(365 days)(1 ac-ft/325,851 gal) = 0.6 ac-ft (estimate)

C. Secondary Water Use

1. **Residential:** None
2. **Institutional:** None
3. **Commercial:** None
4. **Industrial/Stockwater:** None

BRIAN HEAD WATER SYSTEM

Population = 120
Total number of connections = 82 year-round, 1,109 part-time
Residential connections = 56 year-round, 79 part-time
Commercial connections = 25 year-round, 1,030 part-time (condos)
Institutional connections = 1
Industrial/Stockwater connections = 0
Average number of people per residential connection = 2.15 (per 2000 Census)
Average lot size = N/A
Percent lot irrigated = N/A
Domestic Waste Water = Septic tanks

A. Water Supply

1. **Source Capacity:** Springs = 395.2 ac-ft/yr
   Wells = 1,113.0 ac-ft/yr
   Surface = None

2. **Water Rights:** Springs = 331.0 ac-ft/yr
   Wells = 784.7 ac-ft/yr
   Surface = None

3. **Maximum Potable Water Supply:** 331.0 ac-ft/yr (Springs) + 784.7 ac-ft/yr (Wells) = 1,115.7 ac-ft/yr

4. **Reliable Potable Water Supply:** 331.0ac-ft/yr (Springs) + 392.3 ac-ft/yr (Wells) = 723.3 ac-ft/yr

B. Primary Water Use

1. **Residential Indoor:** ((120 full-time res.)(71.3 gpcd)(365 days) + (79 part-time conn)(4 visitor-days/week)(71.3 gpcd)(52 weeks))(1 ac-ft/325,851 gal) = 13.2 ac-ft (estimate)
2. **Residential Outdoor:** None
3. **Institutional Indoor and Outdoor:** 1.0 ac-ft (estimate)
4. **Commercial Indoor and Outdoor:** Total water use = 452.0 ac-ft (given). 452.0 ac-ft (total) – 13.2 ac-ft (res. in.) – 1.0 ac-ft (inst.) – 131.0 (ind/stock) = 306.8 ac-ft
5. **Industrial/Stockwater Indoor and Outdoor:** 131.0 (given – snowmaking)

C. Secondary Water Use

1. **Residential:** None
2. **Institutional:** None
3. **Commercial:** None
4. **Industrial/Stockwater:** None

BUENA VISTA COMMUNITY

Population = 360
Total number of connections = 125
Residential connections = 125
Commercial connections = 0
Institutional connections = 0
Industrial/Stockwater connections = 0
Average number of people per residential connection = 2.88
Average lot size = 0.75 acre
Percent lot irrigated = 40%
Domestic Waste Water = Septic tanks

A. Water Supply

1. **Source Capacity:** Springs = None
   Wells = 483.9 ac-ft/yr
   Surface = None

2. **Water Rights:** Springs = None
   Wells = 135.0 ac-ft/yr
   Surface = None

3. **Maximum Potable Water Supply:** 135.0 ac-ft/yr (Wells)

4. **Reliable Potable Water Supply:** 113.1 ac-ft/yr (Wells)

B. Primary Water Use

1. **Residential Indoor:** (360 people)(71.3 gpcd)(365 days)(1 ac-ft/325,851 gal) = 28.8 ac-ft (estimate)
2. **Residential Outdoor:** Total residential = 113.1 ac-ft (given). Residential outdoor = 113.1 ac-ft (total res) – 28.8 ac-ft (res out) – 0.8 ac-ft (inst.) – 0.7 ac-ft (stock/ind) = 82.8 ac-ft (estimate)
3. **Institutional Indoor and Outdoor:** (5 flushes)(20 hydrants)(5 min/flush)(500 gpm)(1 ac-ft/325,851 gal) = 0.8 ac-ft (estimate)
4. **Commercial Indoor and Outdoor:** None
5. **Industrial/Stockwater Indoor and Outdoor:** (25 head)(25 gal/day/head)(365 days)(1 ac-ft/325,851 gal) = 0.7 ac-ft (estimate)

C. Secondary Water Use

1. **Residential:** None
2. **Institutional:** None
3. **Commercial:** None
4. **Industrial/Stockwater:** None

CEDAR CITY MUNICIPAL WATER

Population = 21,990
Total number of connections = 5,600
Residential connections = 4,784 (estimated connections including apartments = 7,600)
Commercial connections = 655
Institutional connections = 93
Industrial/Stockwater connections = 68
Average number of people per residential connection = 4.60 (2.89 including apartments)
Average lot size = 0.25 acre
Percent lot irrigated = 60%
Domestic Waste Water = Treatment Plant

A. Water Supply

1. **Source Capacity:** Springs = 3,750.6 ac-ft/yr
   Wells = >10,323.2 ac-ft/yr
   Surface = None

2. **Water Rights:** Springs = 4,769.2 ac-ft/yr
   Wells = 10,368.4 ac-ft/yr
   Surface = None

3. **Maximum Potable Water Supply:** 3,750.6 ac-ft/yr (Springs) + 10,368.42 ac-ft/yr (Wells) = 14,119.0 ac-ft/yr

4. **Reliable Potable Water Supply:** 3,750.6 ac-ft/yr (Springs) + 5,184.2 ac-ft/yr (Wells) = 8,934.8 ac-ft/yr

B. Primary Water Use

1. **Residential Indoor:** (21,990 people)(71.3 gpcd)(365 days)(1 ac-ft/325,851 gal) = 1,756.3 ac-ft (estimate)
2. **Residential Outdoor:** Total residential = (1,317,690,000 gal)(1 ac-ft/325,851 gal) = 4,043.8 ac-ft. Residential outdoor = 4,043.8 ac-ft (total res.) – 1,756.3 ac-ft (res in) = 2,287.5 ac-ft (estimate)

   Total Use = 6,134.6 ac-ft; non-residential = 6,134.6 (total) – 1,756.3 (res. in) – 2,287.5 (res. out.) = 2,090.8. Per estimates given by Cedar City, Institutional = 33%, Commercial = 59%, Industrial/Stockwatering = 8% of remaining total.

3. **Institutional Indoor and Outdoor:** (33%)(2,090.8 ac-ft) = 690.0 ac-ft (estimate)
4. **Commercial Indoor and Outdoor:** (59%)(2,090.8 ac-ft) = 1,233.5 ac-ft (estimate)
5. **Industrial/Stockwater Indoor and Outdoor:** (8%)(2,090.8 ac-ft) = 167.3 ac-ft (estimate)

CEDAR CITY MUNICIPAL WATER (continued)

C. Secondary Water Use

1. **Residential:** (4,784 conn)(0.25 ac/conn)(60% irr ac/ac)(21% use sec)(4.0 ac-ft/ac) = 602.8 ac-ft (estimate)
2. **Institutional:** (169,328,000 gal)(1 ac-ft/325,851 gal) = 519.6 ac-ft (given)
3. **Commercial:** None
4. **Industrial/Stockwater:** None

CEDAR HIGHLANDS

Population = 20 (100 part-time)
Total number of connections = 38 (many seasonal houses)
Residential connections = 38
Commercial connections = 0
Institutional connections = 0
Industrial/Stockwater connections = 0
Average number of people per residential connection = 3.11 (County pph)
Average lot size = N/A
Percent lot irrigated = N/A
Domestic Waste Water = Septic tanks

A. Water Supply

1. **Source Capacity:** Springs = 49.0 ac-ft/yr
   Wells = None
   Surface = None

2. **Water Rights:** Springs = 76.0 ac-ft/yr
   Wells = None
   Surface = None

3. **Maximum Potable Water Supply:** 49.0 ac-ft/yr (Springs)

4. **Reliable Potable Water Supply:** 49.0 ac-ft/yr (Springs)

B. Primary Water Use

1. **Residential Indoor:** 35.0 ac-ft (given)
2. **Residential Outdoor:** None
3. **Institutional Indoor and Outdoor:** None
4. **Commercial Indoor and Outdoor:** None
5. **Industrial/Stockwater Indoor and Outdoor:** None

C. Secondary Water Use

1. **Residential:** None
2. **Institutional:** None
3. **Commercial:** None
4. **Industrial/Stockwater:** None

CROSS HOLLOW

Population = 180
Total number of connections = 85
Residential connections = 85
Commercial connections = 0
Institutional connections = 0
Industrial/Stockwater connections = 0
Average number of people per residential connection = 2.12
Average lot size = 3.5 acres
Percent lot irrigated = 2.5%
Domestic Waste Water = Septic tanks

A. Water Supply

1. **Source Capacity:** Springs = None
   Wells = 322.6 ac-ft/yr
   Surface = None

2. **Water Rights:** Springs = None
   Wells = 253.3 ac-ft/yr
   Surface = None

3. **Maximum Potable Water Supply:** 253.3 ac-ft/yr (Wells)

4. **Reliable Potable Water Supply:** 126.6 ac-ft/yr (Wells)

B. Primary Water Use

1. **Residential Indoor:** (180 people)(71.3 gpcd)(365 days)(1 ac-ft/325,851 gal) = 14.4 ac-ft (estimate)
2. **Residential Outdoor:** Total use = 38.3 ac-ft. Residential outdoor = 38.3 (total res) – 14.4 (res in) – 0.4 (inst.) – 1.0 (stock/ind) = 22.5 ac-ft (estimate)
3. **Institutional Indoor and Outdoor:** (4 flushes)(22 hydrants)(3 min)(500 gpm)(1 ac-ft/325,851 gal) = 0.4 ac-ft (estimate)
4. **Commercial Indoor and Outdoor:** None
5. **Industrial/Stockwater Indoor and Outdoor:** (35 head)(25 gal/day/head)(365 days)(1 ac-ft/325,851 gal) = 1.0 ac-ft (estimate)

C. Secondary Water Use

1. **Residential:** None
2. **Institutional:** None
3. **Commercial:** None
4. **Industrial/Stockwater:** None

EAGLE VALLEY RANCH

Population = 80
Total number of connections = 21
Residential connections = 21
Commercial connections = 0
Institutional connections = 0
Industrial/Stockwater connections = 0
Average number of people per residential connection = 3.81
Average lot size = 20 acres
Percent lot irrigated = 5,000 ft^2
Domestic Waste Water = Septic tanks

A. Water Supply

1. **Source Capacity:** Springs = None
   Wells = 322.6 ac-ft/yr
   Surface = None

2. **Water Rights:** Springs = None
   Wells = 30.0 ac-ft/yr
   Surface = None

3. **Maximum Potable Water Supply:** 30.0 ac-ft/yr (Wells)

4. **Reliable Potable Water Supply:** 16.6 ac-ft/yr (Wells)

B. Primary Water Use

1. **Residential Indoor:** (80 people)(71.3 gpcd)(365 days)(1 ac-ft/325,851 gal) = 6.4 ac-ft (estimate)
2. **Residential Outdoor:** (5,000 ft^2)(21 conn)(1 ac-ft/43,560 ft^2)(4.0 ac-ft/ac) = 9.6 ac-ft (estimate)
3. **Institutional Indoor and Outdoor:** None
4. **Commercial Indoor and Outdoor:** None
5. **Industrial/Stockwater Indoor and Outdoor:** (20 head)(25 gal/day/head)(365 days)(1 ac-ft/325,851 gal) = 0.6 ac-ft (estimate)

C. Secondary Water Use

1. **Residential:** None
2. **Institutional:** None
3. **Commercial:** None
4. **Industrial/Stockwater:** None

ENOCH MUNICIPAL WATER SYSTEM

Population = 3,760
Total number of connections = 1,155
Residential connections = 1,125
Commercial connections = 8
Institutional connections = 16
Industrial/Stockwater connections = 6
Average number of people per residential connection = 3.34
Average lot size = 0.4 acre
Percent lot irrigated = 30%
Domestic Waste Water = Treatment Plant (Cedar City)

A. Water Supply

1. **Source Capacity:** Springs = None
   Wells = 4,968.0 ac-ft/yr
   Surface = None

2. **Water Rights:** Springs = None
   Wells = 1,515.0 ac-ft/yr
   Surface = None

3. **Maximum Potable Water Supply:** 1,515.0 ac-ft/yr (Wells)

4. **Reliable Potable Water Supply:** 1,127.2 ac-ft/yr (Wells)

B. Primary Water Use

1. **Residential Indoor:** (1.8 + 1.7 + 6.8 + 6.8 + 1.2) MG/(59 days)/(3,760 people) = 82.5 gpcd (given); (3,760 people)(82.5 gpcd)(365 days)(1 ac-ft/325,851 gal) = 347.5 ac-ft (estimate)
2. **Residential Outdoor:** Total residential = (338.2 MG)(1 ac-ft/325,851 gal) = 1,037.9 ac-ft (given - total use) – 17.0 ac-ft (inst) = 1.020.9 ac-ft (estimate). Residential outdoor = 1,020.9 ac-ft – 347.5 ac-ft (res in) = 673.4 ac-ft (estimate)
3. **Institutional Indoor and Outdoor:** (26.7 MG)(1 ac-ft/325,851 gal) = 81.9 (given) + flushing; (185 hydrants)(2 flushes)(15 min/flush)(1,000 gpm)(1 ac-ft/325,851 gal) = 17.0 ac-ft; 81.9 ac-ft (given) + 17.0 ac-ft (estimate) = 98.9 ac-ft (estimate)
4. **Commercial Indoor and Outdoor:** (1.5 MG)(1 ac-ft/325,851 gal) = 4.6 ac-ft (given)
5. **Industrial/Stockwater Indoor and Outdoor:** (0.9 MG)(1 ac-ft/325,851 gal) = 2.8 ac-ft (given)

C. Secondary Water Use

1. **Residential:** None
2. **Institutional:** None
3. **Commercial:** None
4. **Industrial/Stockwater:** None

ESCALANTE VALLEY

Population = 110
Total number of connections = 29
Residential connections = 29
Commercial connections = 0
Institutional connections = 0
Industrial/Stockwater connections = 0
Average number of people per residential connection = 3.79
Average lot size = N/A; 0.5 acre (total irrigated area)
Percent lot irrigated = N/A
Domestic Waste Water = Septic tanks

A. Water Supply

1. **Source Capacity:** Springs = None
   Wells = 725.9 ac-ft/yr
   Surface = None

2. **Water Rights:** Springs = None
   Wells = 32.2 ac-ft/yr
   Surface = None

3. **Maximum Potable Water Supply:** 32.2 ac-ft/yr (Wells)

4. **Reliable Potable Water Supply:** 16.1 ac-ft/yr (Wells)

B. Primary Water Use

1. **Residential Indoor:** (110 people)(71.3 gpcd)(365 days)(1 ac-ft/325,851 gal) = 8.8 ac-ft (estimate)
2. **Residential Outdoor:** (0.5 acres)(4.0 ac-ft/ac) = 2.0 ac-ft (estimate)
3. **Institutional Indoor and Outdoor:** None
4. **Commercial Indoor and Outdoor:** None
5. **Industrial/Stockwater Indoor and Outdoor:** None

C. Secondary Water Use

1. **Residential:** None
2. **Institutional:** None
3. **Commercial:** None
4. **Industrial/Stockwater:** None

FIFETOWN

Population = 250
Total number of connections = 57 (by observation)
Residential connections = 57
Commercial connections = 0
Institutional connections = 0
Industrial/Stockwater connections = 0
Average number of people per residential connection = 4.39
Average lot size = 2.0 acres (by observation)
Percent lot irrigated = 5% (by observation)
Domestic Waste Water = Septic tanks

A. Water Supply

1. **Source Capacity:** Springs = N/A
   Wells = N/A
   Surface = N/A

2. **Water Rights:** Springs = N/A
   Wells = N/A
   Surface = N/A

3. **Maximum Potable Water Supply:** N/A

4. **Reliable Potable Water Supply:** 43.6 ac-ft/yr (source unknown)

B. Primary Water Use

1. **Residential Indoor:** (250 people)(71.3 gpcd)(365 days)(1 ac-ft/325,851 gal) = 20.0 ac-ft (estimate)
2. **Residential Outdoor:** (57 conn)(2.0 ac/conn)(5% irr ac/ac)(4.0 ac-ft/ac) = 22.8 ac-ft (estimate by observation)
3. **Institutional Indoor and Outdoor:** None
4. **Commercial Indoor and Outdoor:** None
5. **Industrial/Stockwater Indoor and Outdoor:** (30 head)(25 gal/head/day)(365 days)(1 ac-ft/325,851 gal) = 0.8 ac-ft (estimate by observation)

C. Secondary Water Use

1. **Residential:** N/A
2. **Institutional:** N/A
3. **Commercial:** N/A
4. **Industrial/Stockwater:** N/A

FLYING L SUBDIVISION

Population = 60
Total number of connections = 15
Residential connections = 15
Commercial connections = 0
Institutional connections = 0
Industrial/Stockwater connections = 0
Average number of people per residential connection = 4.00
Average lot size = 0.8 acre (only 30% have turf)
Percent lot irrigated = 50%
Domestic Waste Water = Treatment Plant (Cedar City)

A. Water Supply

1. **Source Capacity:** Springs = None
   Wells = 161.3 ac-ft/yr
   Surface = None

2. **Water Rights:** Springs = None
   Wells = 60.0 ac-ft/yr
   Surface = None

3. **Maximum Potable Water Supply:** 60.0 ac-ft/yr (Wells)

4. **Reliable Potable Water Supply:** 30.0 ac-ft/yr (Wells)

B. Primary Water Use

1. **Residential Indoor:** (60 people)(71.3 gpcd)(365 days)(1 ac-ft/325,851 gal) = 4.8 ac-ft (estimate)
2. **Residential Outdoor:** (15 conn)(30% have turf)(0.8 ac/conn)(50% irr ac/ac)(4.0 ac-ft/ac) = 7.2 ac-ft (estimate)
3. **Institutional Indoor and Outdoor:** None
4. **Commercial Indoor and Outdoor:** None
5. **Industrial/Stockwater Indoor and Outdoor:** (7 head)(25 gal/head/day)(365 days)(1 ac-ft/325,851 gal) = 0.2 ac-ft (estimate)

C. Secondary Water Use

1. **Residential:** None
2. **Institutional:** None
3. **Commercial:** None
4. **Industrial/Stockwater:** None

IRONTOWN

Population = 70
Total number of connections = 24 (some summer homes)
Residential connections = 24
Commercial connections = 0
Institutional connections = 0
Industrial/Stockwater connections = 0
Average number of people per residential connection = 2.92
Average lot size = 0.5 acre
Percent lot irrigated = 0%
Domestic Waste Water = Septic tanks

A. Water Supply

1. **Source Capacity:** Springs = N/A
   Wells = N/A
   Surface = N/A

2. **Water Rights:** Springs = None
   Wells = 81.0 ac-ft/yr
   Surface = None

3. **Maximum Potable Water Supply:** N/A

4. **Reliable Potable Water Supply:** 40.5 ac-ft/yr (Wells)

B. Primary Water Use

1. **Residential Indoor:** (70 people)(71.3 gpcd)(365 days)(1 ac-ft/325,851 gal) = 5.6 ac-ft (estimate)
2. **Residential Outdoor:** None
3. **Institutional Indoor and Outdoor:** None
4. **Commercial Indoor and Outdoor:** None
5. **Industrial/Stockwater Indoor and Outdoor:** None

C. Secondary Water Use

1. **Residential:** None
2. **Institutional:** None
3. **Commercial:** None
4. **Industrial/Stockwater:** None

MEADOWS RANCH

Population = 320
Total number of connections = 120
Residential connections = 120
Commercial connections = 0
Institutional connections = 0
Industrial/Stockwater connections = 0
Average number of people per residential connection = 2.67
Average lot size = N/A; 0.25 acre irrigated area (1994 report)
Percent lot irrigated = N/A
Domestic Waste Water = Septic tanks

A. Water Supply

1. **Source Capacity:** Springs = None
   Wells = 403.3 ac-ft/yr
   Surface = None

2. **Water Rights:** Springs = None
   Wells = 235.0 ac-ft/yr
   Surface = None

3. **Maximum Potable Water Supply:** 235.0 ac-ft/yr (Wells)

4. **Reliable Potable Water Supply:** 157.3 ac-ft/yr (Wells)

B. Primary Water Use

1. **Residential Indoor:** ((24,826,100 – 23,352,300)gal/(31 + 14)days)/320 people = 102.3 gpcd; (102.3 gpcd)(320 people)(365 days)(1 ac-ft/325,851 gal) = 36.7 ac-ft (estimate)
2. **Residential Outdoor:** (120 conn)(0.25 ac/conn)(4.0 ac-ft/ac) = 120.0 ac-ft (estimate)
3. **Institutional Indoor and Outdoor:** (21 hydrants)(2 flushes)(2.5 min/flush)(300 gpm) = 0.1 ac-ft (estimate)
4. **Commercial Indoor and Outdoor:** None
5. **Industrial/Stockwater Indoor and Outdoor:** (18 head)(25 gal/head/day)(365 days)(1 ac-ft/325,851 gal) = 0.5 ac-ft (estimate)

C. Secondary Water Use

1. **Residential:** None
2. **Institutional:** None
3. **Commercial:** None
4. **Industrial/Stockwater:** None

MID-VALLEY ESTATES

Population = 630
Total number of connections = 200
Residential connections = 200
Commercial connections = 0
Institutional connections = 0
Industrial/Stockwater connections = 0
Average number of people per residential connection = 3.15
Average lot size = 0.5 acre
Percent lot irrigated = 20%
Domestic Waste Water = Septic tanks

A. Water Supply

1. **Source Capacity:** Springs = None
   Wells = 443.6 ac-ft/yr
   Surface = None

2. **Water Rights:** Springs = None
   Wells = 347.4 ac-ft/yr
   Surface = None

3. **Maximum Potable Water Supply:** 347.4 ac-ft/yr (Wells)

4. **Reliable Potable Water Supply:** 173.7 ac-ft/yr (Wells)

B. Primary Water Use

1. **Residential Indoor:** (630 people)(71.3 gpcd)(365 days)(1 ac-ft/325,851 gal) = 50.3 ac-ft (estimate)
2. **Residential Outdoor:** Total use = (47 MG)(1 ac-ft/325,851 gal) = 144.2 ac-ft (given). Residential outdoor = 144.2 ac-ft (total use) – 50.3 ac-ft (res in) – 0.7 ac-ft (inst.) – 0.6 ac-ft (stock/ind) = 92.6 ac-ft (estimate)
3. **Institutional Indoor and Outdoor:** (47 hydrants)(2 flushes)(5 min/flush)(500 gpm)(1 ac-ft/325,851 gal) = 0.7 ac-ft (estimate)
4. **Commercial Indoor and Outdoor:** None
5. **Industrial/Stockwater Indoor and Outdoor:** (20 head)(25 gal/head/day)(365 days)(1 ac-ft/325,851 gal) = 0.6 ac-ft (estimate)

C. Secondary Water Use

1. **Residential:** None
2. **Institutional:** None
3. **Commercial:** None
4. **Industrial/Stockwater:** None

MONTE VISTA

Population = 170
Total number of connections = 47
Residential connections = 47
Commercial connections = 0
Institutional connections = 0
Industrial/Stockwater connections = 0
Average number of people per residential connection = 3.62
Average lot size = 1.0 acre
Percent lot irrigated = 40%
Domestic Waste Water = Septic tanks

A. Water Supply

1. **Source Capacity:** Springs = None
   Wells = 254.9 ac-ft/yr
   Surface = None

2. **Water Rights:** Springs = None
   Wells = 83.6 ac-ft/yr
   Surface = None

3. **Maximum Potable Water Supply:** 83.6 ac-ft/yr (Wells)

4. **Reliable Potable Water Supply:** 48.7 ac-ft/yr (Wells)

B. Primary Water Use

1. **Residential Indoor:** (170 people)(71.3 gpcd)(365 days)(1 ac-ft/325,851 gal) = 13.6 ac-ft (estimate)
2. **Residential Outdoor:** Total use = 48.7 ac-ft (given). Residential outdoor = 48.7 ac-ft (total use) – 13.6 ac-ft (res in) – 2.0 ac-ft (inst) – 0.4 ac-ft (stock/ind) = 32.7 ac-ft (estimate)
3. **Institutional Indoor and Outdoor:** (0.5 acre)(4.0 ac-ft/ac) = 2.0 ac-ft (estimate)
4. **Commercial Indoor and Outdoor:** None
5. **Industrial/Stockwater Indoor and Outdoor:** (13 head)(25 gal/head/day)(365 days)(1 ac-ft/325,851 gal) = 0.4 ac-ft (estimate)

C. Secondary Water Use

1. **Residential:** None
2. **Institutional:** None
3. **Commercial:** None
4. **Industrial/Stockwater:** None

MT. VIEW SSD

Population = 190
Total number of connections = 63
Residential connections = 63
Commercial connections = 0
Institutional connections = 0
Industrial/Stockwater connections = 0
Average number of people per residential connection = 3.02
Average lot size = 1.0 acres
Percent lot irrigated = 10%
Domestic Waste Water = Septic tanks

A. Water Supply

1. **Source Capacity:** Springs = None
   Wells = 242.0 ac-ft/yr
   Surface = None

2. **Water Rights:** Springs = None
   Wells = 100.0 ac-ft/yr
   Surface = None

3. **Maximum Potable Water Supply:** 100.0 ac-ft/yr (Wells)

4. **Reliable Potable Water Supply:** 50.0 ac-ft/yr (Wells)

B. Primary Water Use

1. **Residential Indoor:** (190 people)(71.3 gpcd)(365 days)(1 ac-ft/325,851 gal) = 15.2 ac-ft (estimate)
2. **Residential Outdoor:** (63 conn)(1.0 acre)(10% irr ac/ac)(4.0 ac-ft/ac) = 25.2 ac-ft (estimate)
3. **Institutional Indoor and Outdoor:** None
4. **Commercial Indoor and Outdoor:** None
5. **Industrial/Stockwater Indoor and Outdoor:** (7 head)(25 gal/head/day)(365 days)(1 ac-ft/325,851 gal) = 0.2 ac-ft (estimate)

C. Secondary Water Use

1. **Residential:** None
2. **Institutional:** None
3. **Commercial:** None
4. **Industrial/Stockwater:** None

NEWCASTLE

Population = 370
Total number of connections = 100
Residential connections = 76
Commercial connections = 11
Institutional connections = 2
Industrial/Stockwater connections = 11
Average number of people per residential connection = 4.87
Average lot size = 0.25 acre irrigated area per lot (1994 report)
Percent lot irrigated = N/A
Domestic Waste Water = Septic tanks

A. Water Supply

1. **Source Capacity:** Springs = None
   Wells = 451.6 ac-ft/yr
   Surface = None

2. **Water Rights:** Springs = None
   Wells = 124.0 ac-ft/yr
   Surface = None

3. **Maximum Potable Water Supply:** 124.0 ac-ft/yr (Wells)

4. **Reliable Potable Water Supply:** 168.1 ac-ft/yr (Wells)

B. Primary Water Use

1. **Residential Indoor:** (370 people)(71.3 gpcd)(365 days)(1 ac-ft/325,851 gal) = 29.6 ac-ft (estimate)
2. **Residential Outdoor:** (76 lots)(60% use cul)(.25 acre/lot)(4.0 ac-ft/ac) = 45.6 ac-ft (estimate)
3. **Institutional Indoor and Outdoor:** Hydrant flush; (23 hydrants)(2 flushes)(1 min/flush)(400 gpm)(1 ac-ft/325,851 gal) = 0.1 ac-ft (estimate)
   Post office; say 0.1 ac-ft (estimate)
   Church; (1,073,000 + 3,125,000)gal(1 ac-ft/325,851 gal) = 12.9 ac-ft (given)
   Cemetery; same size as church - say (3,125,000 gal)(1 ac-ft/325,851 gal) = 9.6 ac-ft (estimate)
   Total = 0.1 ac-ft + 0.1 ac-ft + 12.9 ac-ft + 9.6 ac-ft = 22.7 ac-ft (estimate)
4. **Commercial Indoor and Outdoor:** (54,765.9 gal)(1,000)(1% of total)(1 ac-ft/325,851 gal) = 1.7 ac-ft (given)
5. **Industrial/Stockwater Indoor and Outdoor:** Total use = (54,765,900 gal)(1 ac-ft/325,851 gal) = 168.1 ac-ft (given); Industrial/Stockwater = 168.1 ac-ft (total use) – 29.6 ac-ft (res. in) – 45.6 ac-ft (res. out) – 22.7 ac-ft (inst) - 1.7 ac-ft (comm.) = 68.5 ac-ft (estimate)

NEWCASTLE (continued)

C. Secondary Water Use

1. **Residential:** (76 conn)(0.25 ac/conn)(40% use sec)(4.0 ac-ft/ac) = 30.4 ac-ft (estimate)
2. **Institutional:** None
3. **Commercial:** None
4. **Industrial/Stockwater:** None

OLD MEADOWS

Population = 30
Total number of connections = 18
Residential connections = 18
Commercial connections = 0
Institutional connections = 0
Industrial/Stockwater connections = 0
Average number of people per residential connection = 1.67
Average lot size = 2.5 acres
Percent lot irrigated = 2,500 ft^2 irrigated area per lot
Domestic Waste Water = Septic tanks

A. Water Supply

1. **Source Capacity:** Springs = None
   Wells = 133.9 ac-ft/yr
   Surface = None

2. **Water Rights:** Springs = None
   Wells = 93.7 ac-ft/yr
   Surface = None

3. **Maximum Potable Water Supply:** 93.7 ac-ft/yr (Wells)

4. **Reliable Potable Water Supply:** 46.8 ac-ft/yr (Wells)

B. Primary Water Use

1. **Residential Indoor:** (30 people)(71.3 gpcd)(365 days)(1 ac-ft/325,851 gal) = 2.4 ac-ft (estimate)
2. **Residential Outdoor:** (18 conn)(2.5 acres/conn)(0.02 irr ac/ac)(4.0 ac-ft/ac) + (4 lots)(2 acres/lot)(2.0 ac-ft/ac) = 16.0 ac-ft (estimate)
3. **Institutional Indoor and Outdoor:** None
4. **Commercial Indoor and Outdoor:** None
5. **Industrial/Stockwater Indoor and Outdoor:** (17 head)(25 gal/head/day)(365 days)(1 ac-ft/325,851 gal) = 0.5 ac-ft (estimate)

C. Secondary Water Use

1. **Residential:** None
2. **Institutional:** None
3. **Commercial:** None
4. **Industrial/Stockwater:** None

PARAGONAH

Population = 480
Total number of connections = 240
Residential connections = 238
Commercial connections = 0
Institutional connections = 2
Industrial/Stockwater connections = 0
Average number of people per residential connection = 2.02
Average lot size = 1.0 acres
Percent lot irrigated = 25%
Domestic Waste Water = Septic tanks

A. Water Supply

1. **Source Capacity:** Springs = 854.9 ac-ft/yr
   Wells = None
   Surface = None

2. **Water Rights:** Springs = 415.5 ac-ft/yr
   Wells = None
   Surface = None

3. **Maximum Potable Water Supply:** 415.5 ac-ft/yr (Springs)

4. **Reliable Potable Water Supply:** 415.5 ac-ft/yr (Springs)

B. Primary Water Use

1. **Residential Indoor:** (10,233,363 gal)/(182 days)/(480 people) = 117.1 gpcd (could include outdoor watering – use 100 gpcd). (100.0 gpcd)(480 people)(365 days)(1 ac-ft/325,851 gal) = 53.8 ac-ft (estimate)
2. **Residential Outdoor:** Total residential = (36,066,823 gal)(1 ac-ft/325,851 gal) = 110.7 ac-ft. Residential outdoor = 110.7 ac-ft (total res) – 53.8 ac-ft (res in) – 25.5 ac-ft (inst) – 1.4 ac-ft (stock/ind) = 30.0 ac-ft (estimate)
3. **Institutional Indoor and Outdoor:** (12,730 gal)(1 ac-ft/325,851 gal) = 0.04 ac-ft (given)
   (3 flushes)(15,000 gal/flush)(1 ac-ft/325,851 gal) = 0.14 ac-ft (estimate)
   (4.8 acres)(4.0 ac-ft/ac) = 19.2 ac-ft (estimate) - cemetery
   (2,000,000)(1 ac-ft/325,851 gal) = 6.1 ac-ft (estimate) – miscellaneous leaks
   Total = 0.04 ac-ft + 0.14 ac-ft + 19.2 ac-ft + 6.1 ac-ft = 25.5 ac-ft (estimate)
4. **Commercial Indoor and Outdoor:** None
5. **Industrial/Stockwater Indoor and Outdoor:** (50 horses)(25 gal/head/day)(365 days)(1 ac-ft/325,851 gal) = 1.4 ac-ft (estimate)

PARAGONAH (continued)

A. Secondary Water Use

1. **Residential:** (145 conn)(0.75 ac/conn)(33% irr ac/ac)(4.0 ac-ft/ac) = 145.0 ac-ft (estimate)
2. **Institutional:** (3.5 acres)(4.0 ac-ft/ac) = 14.0 ac-ft (estimate)
3. **Commercial:** None
4. **Industrial/Stockwater:** None

PARK WEST

Population = 120
Total number of connections = 48
Residential connections = 48
Commercial connections = 0
Institutional connections = 0
Industrial/Stockwater connections = 0
Average number of people per residential connection = 2.50
Average lot size = 0.5 acre
Percent lot irrigated = 50%
Domestic Waste Water = Septic tanks

A. Water Supply

1. **Source Capacity:** Springs = None
   Wells = 806.5 ac-ft/yr
   Surface = None

2. **Water Rights:** Springs = None
   Wells = 74.0 ac-ft/yr
   Surface = None

3. **Maximum Potable Water Supply:** 74.0 ac-ft/yr (Wells)

4. **Reliable Potable Water Supply:** 37.0 ac-ft/yr (Wells)

B. Primary Water Use

1. **Residential Indoor:** (120 people)(71.3 gpcd)(365 days)(1 ac-ft/325,851 gal) = 9.6 ac-ft (estimate)
2. **Residential Outdoor:** Total use = (9,459,000 gal)(1 ac-ft/325,851 gal) = 29.0 ac-ft (given). Residential outdoor = 29.0 ac-ft (total use) – 9.6 ac-ft (res in) – 0.6 ac-ft (inst) – 0.7 ac-ft (stock/ind) = 18.1 ac-ft (estimate)
3. **Institutional Indoor and Outdoor:** (200,000 gal)(1 ac-ft/325,851 gal) = 0.6 ac-ft (given)
4. **Commercial Indoor and Outdoor:** None
5. **Industrial/Stockwater Indoor and Outdoor:** (26 head)(25 gal/head/day)(365 days)(1 ac-ft/325,851 gal) = 0.7 ac-ft (estimate)

C. Secondary Water Use

1. **Residential:** None
2. **Institutional:** None
3. **Commercial:** None
4. **Industrial/Stockwater:** None

PAROWAN

Population = 2,630
Total number of connections = 1,553
Residential connections = 1,475
Commercial connections = 66
Institutional connections = 12
Industrial/Stockwater connections = 0
Average number of people per residential connection = 1.78
Average lot size = 0.33 acre
Percent lot irrigated = 33%
Domestic Waste Water = Lagoons

A. Water Supply

1. **Source Capacity:** Springs = 193.6 ac-ft/yr
   Wells = 6,290.7 ac-ft/yr
   Surface = 145.2 ac-ft/yr

2. **Water Rights:** Springs = 1,576.8 ac-ft/yr
   Wells = 1,019.0 ac-ft/yr
   Surface = None

3. **Maximum Potable Water Supply:** 193.6 ac-ft/yr (Springs) + 1,019.0 ac-ft/yr (Wells) = 1,212.6 ac-ft/yr

4. **Reliable Potable Water Supply:** 193.6 ac-ft/yr (Springs) + 509.5 ac-ft/yr (Wells) = 703.1 ac-ft/yr

B. Primary Water Use

1. **Residential Indoor:** ((23 + 893 + 31,966 + 55 + 277 + 2,277 + 122 + 56)TG/(182 days))/2,630 people = 74.5 gpcd (given).
   (74.5 gpcd)(2,630 people)(365 days)(1 ac-ft/325,851 gal) = 219.5 ac-ft (estimate)
2. **Residential Outdoor:** Total use = 441.7; Residential outdoor = 441.7 ac-ft – 219.5 ac-ft – 18.8 ac-ft – 75.8 ac-ft – 2.7 ac-ft = 124.9 ac-ft (estimate).
3. **Institutional Indoor and Outdoor:** (1,996 +43)(3)(1,000 gal)(1 ac-ft/325,851 gal) = 18.8 ac-ft (given)
4. **Commercial Indoor and Outdoor:** (8,236,000 gal)(3)(1 ac-ft/325,851 gal) = 75.8 ac-ft (given)
5. **Industrial/Stockwater Indoor and Outdoor:** (435,000 gal)(2)(1 ac-ft/325,851 gal) = 2.7 ac-ft (given)

PAROWAN (continued)

A. Secondary Water Use

1. **Residential:** (1,475 conn)(0.33 ac/conn)(33% use sec)(80% use sec)(4.0 ac-ft/ac) = 519.2 ac-ft (estimate)
2. **Institutional:** (15 acres)(4.0 ac-ft/ac) = 60.0 ac-ft (estimate)
3. **Commercial:** None
4. **Industrial/Stockwater:** None

RAINBOW RANCHOS

Population = 200
Total number of connections = 70
Residential connections = 69
Commercial connections = 0
Institutional connections = 1
Industrial/Stockwater connections = 0
Average number of people per residential connection = 2.90
Average lot size = 1.0 acre
Percent lot irrigated = 50% have lawns; 1,000 ft^2 irrigated (say 2.3%)
Domestic Waste Water = Septic tanks

A. Water Supply

1. **Source Capacity:** Springs = None
   Wells = 1,613.0 ac-ft/yr
   Surface = None

2. **Water Rights:** Springs = None
   Wells = 149.7 ac-ft/yr
   Surface = None

3. **Maximum Potable Water Supply:** 149.7 ac-ft/yr (Wells)

4. **Reliable Potable Water Supply:** 74.9 ac-ft/yr (Wells)

B. Primary Water Use

1. **Residential Indoor:** ((665,800 + 611,200)gal/(31 + 28)days)/200 people = 108.2 gpcd (given); (200 people)(108.2 gpcd)(365 days)(1 ac-ft/325,851 gal) = 24.2 ac-ft (estimate)
2. **Residential Outdoor:** Total res = (11,097,513 gal)(1 ac-ft/325,851 gal) = 34.1 ac-ft (given); Residential outdoor = 34.1 ac-ft (total res) – 24.2 ac-ft (res in) – 0.8 ac-ft (stock/ind) = 9.1 ac-ft (estimate)
3. **Institutional Indoor and Outdoor:** (895,987 gal)(1 ac-ft/325,851 gal) = 2.7 ac-ft (given)
4. **Commercial Indoor and Outdoor:** None
5. **Industrial/Stockwater Indoor and Outdoor:** (27 head)(25 gal/head/day)(365 days)(1 ac-ft/325,851 gal) = 0.8 ac-ft (estimate)

C. Secondary Water Use

1. **Residential:** None
2. **Institutional:** None
3. **Commercial:** None
4. **Industrial/Stockwater:** None

SPRING CREEK

Population = 190
Total number of connections = 76
Residential connections = 76
Commercial connections = 0
Institutional connections = 0
Industrial/Stockwater connections = 0
Average number of people per residential connection = 2.50
Average lot size = N/A
Percent lot irrigated = N/A
Domestic Waste Water = Septic tanks

A. Water Supply

1. **Source Capacity:** Springs = None
   Wells = 322.6 ac-ft/yr
   Surface = None

2. **Water Rights:** Springs = None
   Wells = 110.0 ac-ft/yr
   Surface = None

3. **Maximum Potable Water Supply:** 110.0 ac-ft/yr (Wells)

4. **Reliable Potable Water Supply:** 55.0 ac-ft/yr (Wells)

B. Primary Water Use

1. **Residential Indoor:** ((578,000 + 538,000)gal/(31 + 28)days)/190 people = 99.6 gpcd; (190 people)(99.6 gpcd)(365 days)(1 ac-ft/325,851 gal) = 21.2 ac-ft (estimate)
2. **Residential Outdoor:** Total use = (12,038,000 gal)(1 ac-ft/325,851 gal) = 36.9 ac-ft (given); Residential outdoor = 36.9 ac-ft (total use) – 21.2 ac-ft (res in) – 1.4 ac-ft (stock/ind) = 14.3 ac-ft (estimate)
3. **Institutional Indoor and Outdoor:** Negligible
4. **Commercial Indoor and Outdoor:** None
5. **Industrial/Stockwater Indoor and Outdoor:** (50 head)(25 gal/head/day)(365 days)(1 ac-ft/325,851 gal) = 1.4 ac-ft (estimate)

C. Secondary Water Use

1. **Residential:** None
2. **Institutional:** None
3. **Commercial:** None
4. **Industrial/Stockwater:** None

SUMMIT SSD

Population = 200
Total number of connections = 84
Residential connections = 82
Commercial connections = 0
Institutional connections = 2
Industrial/Stockwater connections = 0
Average number of people per residential connection = 2.44
Average lot size = 1.25 acres
Percent lot irrigated = 20% (1994 report)
Domestic Waste Water = Septic tanks

A. Water Supply

1. **Source Capacity:** Springs = None
   Wells = 161.3 ac-ft/yr
   Surface = None

2. **Water Rights:** Springs = None
   Wells = 384.9 ac-ft/yr
   Surface = None

3. **Maximum Potable Water Supply:** 161.3 ac-ft/yr (Wells)

4. **Reliable Potable Water Supply:** 98.0 ac-ft/yr (Wells)

B. Primary Water Use

1. **Residential Indoor:** (200 people)(71.3 gpcd)(365 days)(1 ac-ft/325,851 gal) = 16.0 ac-ft (estimate)
2. **Residential Outdoor:** Total use = (31,920,000 gal)(1 ac-ft/325,851 gal) = 98.0 ac-ft (given); Residential outdoor = 98.0 ac-ft (total use) – 16.0 ac-ft (res in) – 10.1 ac-ft (inst) – 15.2 ac-ft (stock/ind) = 56.7 ac-ft (estimate)
3. **Institutional Indoor and Outdoor:** (0.5 acre + 2.0 acres)(4.0 ac-ft/ac) = 10.0 ac-ft (church & cemetery); (17 hydrants)(1 flush)(10 min/flush)(100 gpm) = 0.1 ac-ft; 10.0 ac-ft + 0.1 ac-ft = 10.1 ac-ft (estimate)
4. **Commercial Indoor and Outdoor:** None
5. **Industrial/Stockwater Indoor and Outdoor:** ((2,000 head)(91 days) + (40 head)(365 days))(25 gal/head/day))(1 ac-ft/325,851 gal) + (10 head)(10 gal/head/day)(365 days)(1 ac-ft/325,851 gal) = 15.2 ac-ft (estimate)

SUMMIT SSD (continued)

C. Secondary Water Use

1. **Residential:** (82 conn)(20% use sec)(1.25 ac/conn)(20% irr ac/ac) = 16.4 ac-ft (estimate)
2. **Institutional:** None
3. **Commercial:** None
4. **Industrial/Stockwater:** None

APPENDIX C

WASHINGTON COUNTY
DETAILED DESCRIPTION
PUBLIC COMMUNITY WATER SYSTEMS

Washington County per Capita (gpcd)

$GPCD_{Indoor} = 90.3 / P_{PH} + 42.3$

$P_{PH\ (Washington)} = 2.97$

$GPCD_{Indoor} = (90.3 / 2.97) + 42.3 =$ **72.7 gpcd**

ENTERPRISE

Population = 1,360
Total number of connections = 505
Residential connections = 468
Commercial connections = 21
Institutional connections = 11
Industrial/Stockwater connections = 3
Average number of people per residential connection = 2.91
Average lot size = N/A
Percent lot irrigated = N/A
Domestic Waste Water = Lagoons

A. Water Supply

1. **Source Capacity:** Springs = 277.4 ac-ft/yr
   Wells = 6,452.0 ac-ft/yr
   Surface = None
2. **Water Rights:** Springs = 355.3 ac-ft/yr
   Wells = 707.7 ac-ft/yr
   Surface = None
3. **Maximum Potable Water Supply:** 277.4 ac-ft/yr (Springs) + 707.7 ac-ft/yr (Wells) = 1,063.0 ac-ft/yr
4. **Reliable Potable Water Supply:** 277.4 ac-ft/yr (Springs) + 354.1 ac-ft/yr (Wells) = 631.5 ac-ft/yr

B. Primary Water Use

1. **Residential Indoor:** (1,360 people)(72.7 gpcd)(365 days)(1 ac-ft/325,851 gal) = 110.8 ac-ft (estimate)
2. **Residential Outdoor:** Total residential = (406,000 + 137,619,000 + 8,937,000)gal(1 ac-ft/325,851 gal) = 451.0 ac-ft (given). Residential outdoor = 451.0 ac-ft (total res) – 110.8 ac-ft (res in) = 340.2 ac-ft (estimate)
3. **Institutional Indoor and Outdoor:** (29,535 + 11,866 + 10,442 + 1,852)gal (1,000)(1 ac-ft/325,851 gal) = 164.8 ac-ft (given)
4. **Commercial Indoor and Outdoor:** (4,585,000 gal)(1 ac-ft/325,851 gal) = 14.1 ac-ft (given)
5. **Industrial/Stockwater Indoor and Outdoor:** (537,000)(1 ac-ft/325,851 gal) = 1.6 ac-ft (given)

C. Secondary Water Use

1. **Residential:** None
2. **Institutional:** None
3. **Commercial:** None
4. **Industrial/Stockwater:** None

APPENDIX D

ENOCH WATER USE DATA FORM

APR=1
1/31/03

Information jointly requested by:
Utah Division of Water Resources, 538-7264
Utah Division of Drinking Water, 536-4200; and
Utah Division of Water Rights, 538-7392.

UTAH WATER USE DATA FORM
DATA FOR 2002

Return completed form to:
Utah Division of Water Rights
PO Box 146300
Salt Lake City, UT 84114-6300

System Name: Enoch Municipal Water System
Address: 900 East Midvalley Rd
Enoch, UT 84720

Population Served: 3650 DEQ#: 11004
County: Iron
E-Mail Address: enoch@netutah.com

Contact Person: Ray Ross
Form filled out by: Ray Ross, Gaylen Matheson

Phone Number: (801) 586-1119
Phone Number: _____

I. STORAGE INVENTORY: Total treated storage capacity: 4,250,000 in gallons. Number of Tanks: 3

II. SOURCE INVENTORY:

1 Source Name: Anderson Well Type: Well Location: Sec 07, T35S, R10W, SLB&M WR Number: 73-99 73-303 73-304 73-491 73-522 73-524
Method of Measurement: [X] Master Meter, [ ] Estimate, [ ] Other _____
Units of Measurement: x 1,000,000 Gal Rated Pump Capacity: 500 [X] gpm, [ ] cfs
Date of Last Pump Test: March 25, 1994 Yield of Well 400 [X] gpm, [ ] cfs

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1.8	1.7	1.6	0	9.2	9.4	10.1	7.6	8.0	2.5	0.1	0	52.0

2 Source Name: Homestead Well (12') Type: Well Location: Sec 18, T35S, R10W, SLB&M WR Number: 73-99 73-303 73-304 73-491 73-522 73-524
Method of Measurement: [X] Master Meter, [ ] Estimate, [ ] Other _____
Units of Measurement: x 1,000,000 Gal Rated Pump Capacity: 1970 [X] gpm, [ ] cfs
Date of Last Pump Test: Aug. 20, 1973 Yield of Well 780 [X] gpm, [ ] cfs

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
0	0	0	0	0.7	12.8	27.7	9.5	5.8	1.6	1.6	0	59.7

3 Source Name: Ravine Well Type: Well Location: Sec , T, R, B&M WR Number: 73-303 73-298 73-2532
Method of Measurement: [X] Master Meter, [ ] Estimate, [ ] Other _____
Units of Measurement: x 1,000,000 Gal. Rated Pump Capacity: 750 [X] gpm, [ ] cfs
Date of Last Pump Test: Mar. 23, 1999 Yield of Well 400 [X] gpm, [ ] cfs

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
6.8	6.8	6.3	8.0	7.0	3.8	7.6	1.2	0.2	0	0	0	47.7

RECEIVED
JAN 31 2003
WATER RIGHTS
SALT LAKE

4 Source Name: Woolsey Well (12') Type: Well Location: Sec 07, T35S, R10W, SLB&M WR Number: 73-99 73-303 73-304 73-491 73-522 73-524
Method of Measurement: [X] Master Meter, [ ] Estimate, [ ] Other _____
Units of Measurement: x 1,000,000 Gal. Rated Pump Capacity: 500 [X] gpm, [ ] cfs
Date of Last Pump Test: Feb 21, 1986 Yield of Well 400 [X] gpm, [ ] cfs

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1.2	0	0	2.8	9.5	10.8	12.0	4.7	3.8	0.4	0.1	0	45.3

**** If you are using other sources which are not shown above, please enter the appropriate data in the space provided below. ****

5 Source Name: Iron Works Well Type: Location: Rated Pump 1900 gpm WR Number:
Method of Measurement: [X] Master Meter, [ ] Estimate, [ ] Other _____
Units of Measurement: x 1,000,000 Yield of well: 1000 gpm

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
0	0	0	0	0	0	10.0	38.1	41.6	35.5	26.4	11.0	162.6

6 Source Name: Type: Location: WR Number:
Method of Measurement: [ ] Master Meter, [ ] Estimate, [ ] Other _____
Units of Measurement: _____

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL

7 Source Name: Type: Location: WR Number:
Method of Measurement: [ ] Master Meter, [ ] Estimate, [ ] Other _____
Units of Measurement: _____

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL

SOURCE COMMENTS: Water supply conditions were: [ ] Above normal, [X] Below normal

Water table dropped 20 feet.

III. WATER USE BREAKDOWN: (Please use sum of the readings from individual meters, not master meter readings at source. If quantities are not known, please estimate. See instructions for definition of uses shown in bold).

Units of Measurement: x 1,000,000 Gal.

Residential: Annual quantity of water delivered for residential purposes 338.2. Total number of residential connections 1161.
Meter readings at individual connections [ ]; or Estimated [ ]
Number of connections serving multiple units (apartments) from a single connection _____. Units per connection (avg) _____.

Commercial: Annual quantity of water delivered for commercial purposes 1.5. Total number of commercial connections 8.
Meter readings at individual connections [ ]; or Estimated [ ]

Industrial: Annual quantity of water delivered for industrial purposes —. Total number of industrial connections —.
Meter readings at individual connections [ ]; or Estimated [ ]

Institutional: Annual quantity of water delivered for institutional purposes 26.7. Total number of institutional connections 16.
Meter readings at individual connections [ ]; or Estimated [ ]

Stockwatering: Annual quantity of water delivered for stockwatering purposes .9. Total number of stockwatering connections 6.
Meter readings at individual connections [ ]; or Estimated [ ]

Wholesale: Annual quantity of water delivered for wholesale purposes _____. Please attach a listing of those supplied.
Meter readings at individual connections [ ]; or Estimated [ ]

Other Uses: Annual quantity of water delivered for other purposes _____. Total number of other connections _____.
Meter readings at individual connections [ ]; or Estimated [ ]
Describe other uses _____.

Unmetered: Annual estimate of water delivered by unmetered connections _____. Total number of unmetered connections _____.
Unmetered connections used for _____.

Total annual quantity of water delivered for all purposes 367.3. **Total number of all connections** 1191.
Of this total, how many connections are active? - 36 vacant = 1155 active

-06-

IV. IRRIGATION SYSTEM (Separate lawn and garden irrigation system, **whether controlled by the drinking water supplier or not**)

Is any of your area served by a separate ditch or pipe fed irrigation water system? [ ] Yes, [ ] No If yes, please provide the following information:
What percent of your customers are served by a separate irrigation system? _____%
NA
Of these customers, what percent are served by ditch? _____%
What percent are served by pressurized-pipe? _____%
Do you operate and maintain the separate lawn and garden irrigation water system? [ ] Yes, [ ] No
If the separate irrigation system is operated by other entities, please give name of companies, contact person & phone number:

APPENDIX E

2002 CEDAR/BEAVER RIVER BASIN DEPLETIONS

CEDAR/BEAVER BASIN MUNICIPAL AND INDUSTRIAL DEPLETION TABLE

(Acre-Feet/Year)

WATER SUPPLIER	Potable Residential Indoor Use	Potable Residential Outdoor Use	Potable Commercial Use	Potable Institutional Use	Potable Industrial/ Stockwater Use	Potable Self-Supplied Industries Use	Total Potable Use	Total Secondary Water Use	Total Indoor Use	Total Outdoor Use	Residential Indoor Return Flow	Commercial Indoor Return Flow	Institutional Indoor Return Flow	Industrial/ Stockwater Indoor Return Flow	Total Indoor Return Flow to Treatment Facility	Pond Evaporation	Treatment Facility Outflow (Indoor Return Flow)	Outdoor Return Flow	Total Return Flow	Total Diversions	Total Depletions
Beaver																					
Beaver City Water System	216.1	6.3	207.4	2.5	14.1	0.0	446.4	1007.3	396.6	1057.1	211.8	162.6	0.5	7.1	381.9	114.9	*248.0*	352.4	600.3	1453.7	853.4
Manderfield Culinary Water System	4.9	15.0	0.0	0.0	6.3	0.0	26.2	0.0	11.2	15.0	4.8	0.0	0.0	3.2	8.0	0.0	*7.6*	5.0	12.6	26.2	13.6
Milford City Water System	126.9	180.7	36.3	137.9	1.0	0.0	482.8	251.9	184.5	550.2	124.4	28.5	27.0	0.5	180.3	52.2	*119.1*	183.4	302.5	734.7	432.2
Minersville Water System	72.1	110.5	1.5	5.9	113.8	0.0	303.8	166.8	188.3	282.3	70.7	1.2	1.2	56.9	129.9	33.9	*89.5*	94.1	183.6	470.6	287.0
TOTAL COMMUNITY SYSTEMS	**420.0**	**312.5**	**245.2**	**146.3**	**135.2**	**0.0**	**1259.2**	**1426.0**	**780.6**	**1904.6**	**411.6**	**192.2**	**28.7**	**67.6**	**700.1**	**201.0**	**464.1**	**634.9**	**1099.0**	**2685.2**	**1586.2**
Non-community systems	58.6	109.3	24.0	12.4	0.0	5689.7	5894.0	0.0	5770.0	124.0	57.5	18.8	2.4	0.0	78.7	0.0	*74.8*	41.3	116.1	5894.0	5777.9
COUNTY TOTALS	**478.6**	**421.8**	**269.2**	**158.7**	**135.2**	**5689.7**	**7153.2**	**1426.0**	**6550.6**	**2028.6**	**469.1**	**211.1**	**31.1**	**67.6**	**778.8**	**201.0**	**538.9**	**676.2**	**1215.1**	**8579.2**	**7364.1**
Iron																					
Angus Water Co., Inc.	9.6	43.0	0.0	12.0	0.6	0.0	65.2	0.0	12.6	52.6	9.4	0.0	2.4	0.3	12.1	0.0	*11.5*	17.5	29.0	65.2	36.2
Brian Head Water System	13.2	0.0	306.8	1.0	131.0	0.0	452.0	0.0	389.8	62.2	12.9	240.5	0.2	65.5	319.2	0.0	*303.2*	20.7	323.9	452.0	128.1
Buena Vista Community	28.8	82.8	0.0	0.8	0.7	0.0	113.1	0.0	29.7	83.4	28.2	0.0	0.2	0.4	28.7	0.0	*27.3*	27.8	55.1	113.1	58.0
Cedar City Waterworks System	1756.3	2287.5	1233.5	690.0	167.3	0.0	6134.6	1122.4	3048.4	4208.6	1721.2	967.1	135.2	83.7	2907.1	0.0	*2761.8*	1402.9	4164.6	7257.0	3092.4
Cedar Highlands Subdivision	35.0	0.0	0.0	0.0	0.0	0.0	35.0	0.0	35.0	0.0	34.3	0.0	0.0	0.0	34.3	0.0	*32.6*	0.0	32.6	35.0	2.4
Cross Hollow Hills Subdivision	14.4	22.5	0.0	0.4	1.0	0.0	38.3	0.0	15.5	22.8	14.1	0.0	0.1	0.5	14.7	0.0	*14.0*	7.6	21.6	38.3	16.7
Eagle Valley Ranch	6.4	9.6	0.0	0.0	0.6	0.0	16.6	0.0	7.0	9.6	6.3	0.0	0.0	0.3	6.6	0.0	*6.2*	3.2	9.4	16.6	7.2
Enoch City Water System	347.5	673.4	4.6	98.9	2.8	0.0	1127.2	0.0	373.8	753.4	340.6	3.6	19.4	1.4	364.9	0.0	*346.7*	251.1	597.8	1127.2	529.4
Escalante Valley Water System	8.8	2.0	0.0	0.0	0.0	0.0	10.8	0.0	8.8	2.0	8.6	0.0	0.0	0.0	8.6	0.0	*8.2*	0.7	8.9	10.8	1.9
Fifetown Water System	20.0	22.8	0.0	0.0	0.8	0.0	43.6	0.0	20.8	22.8	19.6	0.0	0.0	0.4	20.0	0.0	*19.0*	7.6	26.6	43.6	17.0
Flying L Subdivision	4.8	7.2	0.0	0.0	0.2	0.0	12.2	0.0	5.0	7.2	4.7	0.0	0.0	0.1	4.8	0.0	*4.7*	2.4	7.1	12.2	5.1
Irontown	5.6	0.0	0.0	0.0	0.0	0.0	5.6	0.0	5.6	0.0	5.5	0.0	0.0	0.0	5.5	0.0	*5.2*	0.0	5.2	5.6	0.4
Meadows Ranches	36.7	120.0	0.0	0.1	0.5	0.0	157.3	0.0	37.2	120.1	36.0	0.0	0.0	0.3	36.2	0.0	*35.5*	40.0	75.5	157.3	81.8
Mid Valley Estates	50.3	92.6	0.0	0.7	0.6	0.0	144.2	0.0	51.0	93.2	49.3	0.0	0.1	0.3	49.7	0.0	*48.5*	31.1	79.6	144.2	64.6
Monte Vista Com. Water Co.	13.6	32.7	0.0	2.0	0.4	0.0	48.7	0.0	14.4	34.3	13.3	0.0	0.4	0.2	13.9	0.0	*13.2*	11.4	24.7	48.7	24.0
Mt. View SSD	15.2	25.2	0.0	0.0	0.2	0.0	40.6	0.0	15.4	25.2	14.9	0.0	0.0	0.1	15.0	0.0	*14.7*	8.4	23.1	40.6	17.5
New Castle Water Company	29.6	45.6	1.7	22.7	68.5	0.0	168.1	30.4	104.0	94.5	29.0	1.3	4.4	34.3	69.0	0.0	*65.6*	31.5	97.1	198.5	101.4
Old Meadows Water Co.	2.4	16.0	0.0	0.0	0.5	0.0	18.9	0.0	2.9	16.0	2.4	0.0	0.0	0.3	2.6	0.0	*2.5*	5.3	7.8	18.9	11.1
Paragonah Town	53.8	30.0	0.0	25.5	1.4	0.0	110.7	159.0	60.3	209.4	52.7	0.0	5.0	0.7	58.4	0.0	*55.5*	69.8	125.3	269.7	144.4
Park West Water Company	9.6	18.1	0.0	0.6	0.7	0.0	29.0	0.0	10.4	18.6	9.4	0.0	0.1	0.4	9.9	0.0	*9.4*	6.2	15.6	29.0	13.4
Parowan Waterworks System	219.5	124.9	75.8	18.8	2.7	0.0	441.7	579.2	286.6	734.3	215.1	59.4	3.7	1.4	279.6	118.3	*147.3*	244.8	392.1	1020.9	628.8
Rainbow Ranchos	24.2	9.1	0.0	2.7	0.8	0.0	36.8	0.0	25.5	11.3	23.7	0.0	0.5	0.4	24.6	0.0	*23.4*	3.8	27.2	36.8	9.6
Spring Creek Water Users	21.2	14.3	0.0	0.0	1.4	0.0	36.9	0.0	22.6	14.3	20.8	0.0	0.0	0.7	21.5	0.0	*20.9*	4.8	25.7	36.9	11.2
Summit SSD	16.0	56.7	0.0	10.1	15.2	0.0	98.0	16.4	33.2	81.2	15.7	0.0	2.0	7.6	25.3	0.0	*24.8*	27.1	51.8	114.4	62.6
TOTAL COMMUNITY SYSTEMS	**2742.5**	**3736.0**	**1622.4**	**886.3**	**397.9**	**0.0**	**9385.1**	**1907.4**	**4615.6**	**6676.9**	**2687.7**	**1272.0**	**173.7**	**199.0**	**4332.3**	**118.3**	**4001.6**	**2225.6**	**6227.3**	**11292.5**	**5065.2**
Non-community systems	207.0	412.7	3.7	74.1	0.0	2390.0	3087.5	0.0	2614.7	472.8	202.8	2.9	14.5	0.0	220.2	0.0	*209.2*	157.6	366.8	3087.5	2720.7
COUNTY TOTALS	**2949.5**	**4148.7**	**1626.1**	**960.4**	**397.9**	**2390.0**	**12472.6**	**1907.4**	**7230.3**	**7149.7**	**2890.5**	**1274.9**	**188.2**	**199.0**	**4552.5**	**118.3**	**4210.9**	**2383.2**	**6594.1**	**14380.0**	**7785.9**
Millard																					
Non-community systems	3.7	1.3	5.7	44.5	0.0	0.0	55.2	6.4	17.1	44.5	3.6	4.5	8.7	0.0	16.8	0.0	*15.9*	14.8	30.8	61.6	30.8
COUNTY TOTALS	**3.7**	**1.3**	**5.7**	**44.5**	**0.0**	**0.0**	**55.2**	**6.4**	**17.1**	**44.5**	**3.6**	**4.5**	**8.7**	**0.0**	**16.8**	**0.0**	**15.9**	**14.8**	**30.8**	**61.6**	**30.8**
Washington																					
Enterprise	110.8	340.2	14.1	164.8	1.6	0.0	631.5	0.0	156.6	474.9	108.6	11.1	32.3	0.8	152.7	39.3	***110.4***	158.3	268.6	631.5	362.9
TOTAL COMMUNITY SYSTEMS	**110.8**	**340.2**	**14.1**	**164.8**	**1.6**	**0.0**	**631.5**	**0.0**	**156.6**	**474.9**	**108.6**	**11.1**	**32.3**	**0.8**	**152.7**	**39.3**	**110.4**	**158.3**	**268.6**	**631.5**	**362.9**
Non-community systems	1.1	2.2	0.0	0.1	0.0	0.0	3.4	0.0	1.1	2.3	1.1	0.0	0.0	0.0	1.1	0.0	*1.0*	0.8	1.8	3.4	1.6
COUNTY TOTALS	**111.9**	**342.4**	**14.1**	**164.9**	**1.6**	**0.0**	**634.9**	**0.0**	**157.8**	**477.1**	**109.7**	**11.1**	**32.3**	**0.8**	**153.8**	**39.3**	**111.4**	**159.0**	**270.4**	**634.9**	**364.5**

	Potable Residential Indoor Use	Potable Residential Outdoor Use	Potable Commercial Use	Potable Institutional Use	Potable Industrial/ Stockwater Use	Potable Self-Supplied Industries Use	Total Potable Use	Total Secondary Water Use	Total Indoor Use	Total Outdoor Use	Residential Indoor Return Flow	Commercial Indoor Return Flow	Institutional Indoor Return Flow	Industrial/ Stockwater Indoor Return Flow	Total Indoor Return Flow to Treatment Facility	Pond Evaporation	Treatment Facility Outflow (Indoor Return Flow)	Outdoor Return Flow	Total Return Flow	Total Diversions	Total Depletions
BASIN COMMUNITY SYSTEMS	**3273.3**	**4388.7**	**1881.7**	**1197.4**	**534.7**	**0.0**	**11275.8**	**3333.4**	**5552.8**	**9056.4**	**3207.8**	**1475.3**	**234.7**	**267.4**	**5185.1**	**358.6**	**4576.1**	**3018.8**	**7594.9**	**14609.2**	**7014.3**
Total Non-Community systems	270.4	525.5	33.4	131.1	0.0	8079.7	9040.1	6.4	8403.0	643.5	265.0	26.2	25.7	0.0	316.8	0.0	301.0	214.5	515.5	9046.5	8531.0
KCVR BASIN TOTALS	**3543.7**	**4914.2**	**1915.1**	**1328.5**	**534.7**	**8079.7**	**20315.9**	**3339.8**	**13955.8**	**9699.9**	**3472.8**	**1501.4**	**260.4**	**267.4**	**5502.0**	**358.6**	**4877.1**	**3233.3**	**8110.4**	**23655.7**	**15545.3**

Color Code:
- **Potable Use Data**
- **Secondary Use Data**
- **Indoor/Outdoor Use Data**
- **Return Flow Data**
- **Diversion Data**
- **Depletion Data**

Treatment Facility Font Key: Regular = Sewage Treatment Plant
Italics = Septic System/Tanks
Bold = Facultative Ponds/ Lagoons
Bold & *Italics* = Septic & Ponds/Plant mix